

Railway Age

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SIXTY-SIXTH YEAR

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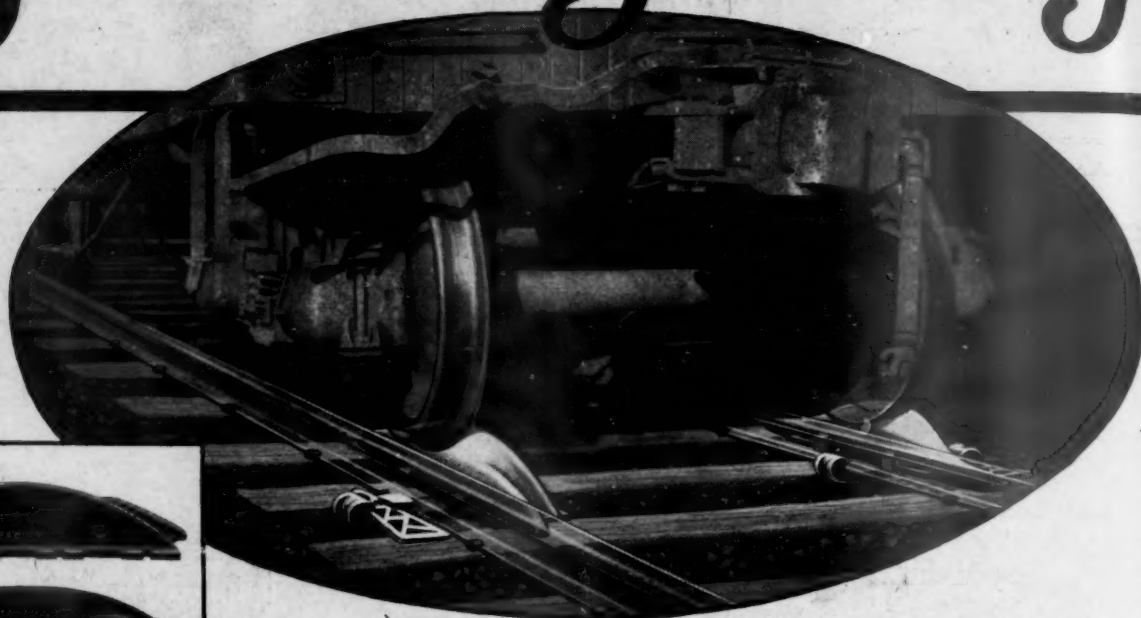
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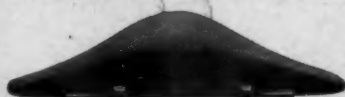
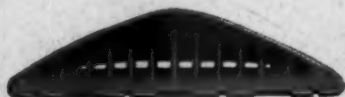
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EDITORIAL

Railway Age

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Designers of cars and locomotives should more consistently follow the equipment when it goes into service. Unless there are bad failures they do not often hear from the equipment. It is important, however, from the standpoint of cost of maintenance and also of operation that they know of the minor failures and of cases where the wear of parts is excessive; and they should know that the equipment is giving complete satisfaction so far as convenience of handling and operation is concerned. This will require organized effort outside of the drafting room, but the cost of this will be repaid many times over in the improvements that will follow.

The Equipment Designers' Responsibility

The railroads of this country are vitally concerned with the industrial prosperity of the country as a whole. Improved business conditions in this country are dependent in a large measure upon trade with foreign countries. Most of the European countries cannot do much business with us because of their unbalanced budgets and mounting deficits. Indeed our financiers and business men will not extend credit to them as long as they tend toward a condition of bankruptcy. The deficits for these countries in many cases just about equal the cost of maintaining their armaments. The conference at Washington seems to be in a fair way to succeed in its efforts to reduce the large navies and settle the Far Eastern question. The countries which are running up deficits and with whom we want to do business are more or less helpless because of the burden of supporting large land armaments. Is it not vital therefore that American business men get behind a program looking toward another conference in the near future to study land disarmament and other economic problems and that financiers and business men be well represented in the conference?

The Taxes on Transportation

In view of the formidable amount of agitation that is going on in favor of reductions in freight rates and passenger fares, it is somewhat surprising that more attention has not been given to the elimination of the taxes on transportation charges. Mr. Average Man has been paying high freight rates and passenger fares, but he has somehow failed to realize that 3 per cent of his freight charges and 8 or 10 per cent of his passenger fares and sleeping car rates have represented taxes. Possibly the fact that he has failed to realize it is the reason he has failed to realize that the elimination of the taxes will amount in effect to a reduction of the charges which he has paid. On the other hand, Mr. Average Man has found himself rather busy of late, keeping up with the news. Between the conference on the limitation of armaments, the pending solution of the Irish question and a multitude of lesser things, the reduction in taxes in transportation has taken second place. The average business man further has also at last found himself in a happy frame of mind where he can worry again about his business—that is, conditions are gradually improving sufficiently so that worrying about his business is really worth while again.

Up to within a comparatively recent period one of the leading questions in connection with the railways of Japan was that

Electrification in Japan

of widening the lines to standard gage. Japan's government owned railways total over 6,000 miles. They are of 3 ft. 6 in. gage. It was proposed to widen this gage to 4 ft. 8½ in., although it was understood that this would have meant the expenditure of enormous sums of money both as relates to the widening of the right of way and to the necessary changes in equipment. The strength behind the proposal presented itself in a rather strong fashion. Bills were prepared for presentation by the government, although the program never went far enough to be brought to a vote. We are now advised that the proposal for widening the railway gage has been relegated to the background. Railway Japan is now thinking and talking electrification. The reason is partly the difficulty of getting sufficient quantities of coal at a reasonable cost and, on the other hand, the availability of large sources of water power. Japan at present has some electrified lines—the development of her electric tramways also is noteworthy. The country, as it happens, is in a position to build its own steam locomotives and has been building them for some time. It is not without significance to American trade, therefore, that orders should recently have been placed with two of our largest electrical concerns for some \$5,000,000 worth of electrical apparatus for hydro-electric developments.

As a general rule it is probably safe to say that the rewards of supervision vary with the size of a business. In other words, the need and results of supervision are of greater importance in a business of many ramifications than in one that is more or less self-contained.

Why Not Assume a Positive Attitude?

Because of the character of its organization a railroad presents numerous opportunities for the creeping in of wasteful practices and the efforts of supervisory officers to prevent and eliminate them are practically continuous. Nevertheless, in too many instances the corrective measures undertaken are, so to speak, retrospective in character rather than introspective. That is to say, there is often an inclination to approach the matter of effecting improvements in a negative manner by pointing out the ill results of existing practices rather than from the positive attitude of applying the remedy before the fact. For instance, the matter of prevention of freight loss and damage claims is often approached in a negative way by presenting to those concerned figures showing the total loss and supporting the figures by pictures, charts or other means. There is no question but that such action creates a desire on the part of the men to see the matter remedied. In such a plan, however, the personal equation is missing and it is not hard to believe that the desired end could more nearly be approximated if the plan of approach were made positive by giving each employee something to do in the matter in addition to bringing home to him the results of present practices. It is probably safe to say that in the great majority of supervisory problems the transition from a negative attitude to the positive is a very simple matter. However, the importance of effecting the change in front can hardly be overestimated.

The New "National Agreement"

THE DECISION of the United States Railroad Labor Board finally disposing of the so-called "national agreement" between the shop crafts and the United States Railroad Administration is a much needed step toward the attainment of stable relations between the railroads and their shop employees. With whatever feeling the result may be regarded by the two parties to the controversy, the mere fact of a settlement of reasonable permanency is likely to have a marked influence in restoring some measure of co-operation between the members of the shop crafts and the railway supervisory forces.

Like any decision essentially a compromise, there are not lacking numerous features with which each party to the controversy will be disappointed. The employees, however, cannot legitimately claim they have been unjustly dealt with and the railroads have been relieved of by far the greater part of the vicious and restrictive regulations of the former national rules. It is true that the main contention of the railroads in the presentation of their case before the board was the establishment of the right of the railroads to negotiate local agreements with their own employees and the abrogation of national agreements which of necessity cannot fit the widely varying conditions existing on different roads. The re-establishment of a set of national rules was a defeat for the roads on this point. This defeat, however, is only partial, since the right of negotiations between the individual roads and their own employees has been established in principle, and where local agreements have been negotiated they are undisturbed by the new national rules.

The original decision in the national agreement case was handed down by the board on April 14, 1921. This decision called upon the officers and organizations of employees on each road to negotiate their own local agreements as far as possible, in accordance with the terms of the Transportation Act. Because of the power of the Railway Employees Department of the American Federation of Labor to control these negotiations, the entire controversy was forced back to the Labor Board for final settlement. As a practical matter it would have been impossible for the board to have established other than national rules. Therefore, under the terms of the Transportation Act, the perpetuation of the equivalent of a national agreement was inevitable in the circumstances. Had the employees entered the local negotiations in a spirit of co-operation, other results might have been obtained, but they were prevented by the power of the American Federation of Labor, attained through the closed shop conditions established by the Railroad Administration.

In this connection it is worthy of note that while this power enforced the continuation of national rules, the provisions of the former agreement practically establishing the closed shop are materially modified in new rule 35, which protects unorganized or minority employees in the right of representation of their own choosing in the handling of grievances.

Specifically, however, the new rules have been made much more flexible than those of the former national agreement and will be much easier to adapt to varying local conditions. They have restored the right to the establishment of piece work by local agreement; the arrangement of shifts is left to local agreement; the features of the overtime rules have been revised substantially in accordance with the railroads' objections; the craft classifications have been modified in several important respects to permit the use of helpers where mechanics were formerly required and they have been made more flexible of application on running repairs in small shops and terminals. The right to the establishment of special apprenticeship is restored; more flexible and satisfactory provisions have been made for reducing expenses and the worst features of the running repair and dead work rules have been eliminated.

It is true that not all objectionable features of the rules have been removed. The classification rules still prevent the use of handymen and specialists not rated as mechanics; the class qualification rules, particularly the carmen's rule, place undue limitations on the supply of labor, and the seniority rule perpetuates the lack of discrimination between the various classes of carmen established by the rule of the former national agreement. The spirit of the rules, however, is greatly improved and the fact that in promulgating them the Labor Board has abrogated all interpretations handed down by the adjustment boards of the United States Railroad Administration, a large part of which were punitive in spirit, justifies the expectation that future interpretations may be formulated on a far more hopeful basis. This fact alone will be of tremendous value in re-establishing a better morale throughout the departments affected.

However unsatisfactory some of the provisions of the new rules may be, the roads should take full and immediate advantage of the opportunity which they offer for the re-establishment of piece work and the building up of better discipline and a spirit of co-operation between the employees and supervisory forces. With such a spirit fully established the way is open for future modifications of objectionable features of the rules through local negotiations and agreements.

Railway Rates and Revival of Business

WOULD A GENERAL REDUCTION of railway freight rates help business? Almost everybody, including railway officers, believes it would. The railways are taking steps to bring a case before the Railroad Labor Board for a reduction of wages. They have said they will give to the public in reduced rates the full benefit of any reduction of wages they get. As an earnest of their good intentions, they have granted for six months a reduction of 10 per cent in all rates on farm products, which will be permanent if a reasonable reduction of wages is secured.

There are two points regarding railway rates which should, however, be forcibly emphasized at this time. One is that no more baseless statement could be made than the oft-repeated assertion that the present railway rates have "killed" the business of the country and the traffic of the railways, and are preventing a revival of business and traffic. The other is that many other changes besides any such reduction of railway wages as seems now to be in immediate prospect must be made before any really large reduction of railway rates can be expected.

The *Railway Age*, in its issue for December 3, page 1089, published an article showing that in spite of all that has been said about the present "excessive" rates, the average railway freight rate is today actually lower, compared with the present prices of most commodities, than has been the case most of the time during the past 32 years. If we take the average freight rate and the average wholesale prices of the years 1890 to 1899 as a basis, we find that in July, 1921, the average railway rate per ton per mile and the average wholesale prices of commodities were the following percentages higher than in the years 1890-1899:

	Per Cent
Railway rate per ton per mile.....	49
Farm Products	89
Foods	84
Cloths and Clothing.....	122
Fuel and Lighting.....	161
Metals and Implements.....	60
Lumber and Building Materials.....	204
Drugs and Chemicals.....	102
House Furnishings	177
Miscellaneous	104
All Commodities	100

If we take the average railway rate and average wholesale prices of the years 1900-1910 as a basis, we find that in July, 1921, the average railway rate and average commodity

prices were the following percentages higher than in 1900-1910:

	Per Cent
Railway rate per ton per mile.....	65.50
Farm Products	42
Foods	61.50
Cloths and Clothing.....	93
Fuel and Lighting.....	98
Metals and Implements.....	29
Lumber and Building Materials.....	130
Drugs and Chemicals.....	82
House Furnishings	147
Miscellaneous	71.50
All Commodities	66.66

(This last figure was erroneously given as 76 per cent in an article in last week's *Railway Age*.)

The average railway rate is not at present quite as high compared with where it stood in 1900-1910 as the average wholesale price of all commodities. It is higher relatively than the average prices of farm products, foods, and metals and implements, but lower relatively than the average price of any other group of commodities, and much lower relatively than the average prices of fuel and lighting, lumber and building materials, and house furnishings.

It has been and is still being widely charged that the present freight rates are preventing the movement of large amounts of traffic. It is well known, however, that the volume of farm products shipped in the year 1921 has thus far been larger than in any previous year. This proves that the rates have not seriously hindered the movement of farm products. The prices charged for any class of commodities must have a much greater influence upon the amount of them that can be marketed, and which therefore can be shipped, than is exerted by the railway rates on them, which in most cases are only relatively small percentages of the total prices. The figures regarding the present average railway rate and average prices show that the prices which are still being charged for many commodities are exerting a great deal more influence on the volume of them shipped than are the freight rates being charged on them. Are not some groups of producers who are still charging prices from 100 to 150 per cent more than in the ten years prior to 1910 getting on rather thin ice when, upon the ground that the traffic cannot bear them, they demand reductions in railway rates which are relatively much lower than the prices they are charging?

Another most important point to be considered is the influence exerted by the present level of prices upon the ability of the railways to reduce their rates. The prices being charged for some important classes of commodities, such as coal, directly affect the operating expenses of the railways. The prices of all commodities also affect the operating expenses of the railways by determining the cost of living of their employees and, therefore, indirectly, the wages the railways must pay. The wages of most classes of railway employees are too high, and some much too high, in proportion to present rates, the prices of most commodities, the cost of living and the wages paid in other industries. It is made evident, however, by careful study of the present relations between railway rates, commodity prices and wages in the railroad and other industries that if both railway wages and railway rates are to be largely reduced the reduction in them must be accompanied by further reductions in the wholesale and retail prices of many kinds of commodities.

There are some important classes of commodities the prices of which at the present time are relatively lower than the average railway rate. The average price of metals and implements, for example, is only 29 per cent higher than in 1900 to 1910, and the average price of farm products only 42 per cent higher. Certainly, however, shippers of the many commodities whose prices are still much higher relatively than the railway rates on their commodities, have no right to complain about the present rates as long as they maintain the present prices. One of the principal reasons for the long continuance of the industrial depression is that the prices of some commodities are still relatively much too high compared with railway rates and with prices of other commodities.

No conceivable reduction of railway rates would materially stimulate general business until these maladjustments between the prices of different commodities were corrected, and, furthermore, no really large reduction of rates can possibly be justified as long as the prices of most commodities are relatively as high, and some much higher, than the general level of railway rates.

Should the Low Bidder Get the Work?

IN THE EARLY YEARS of the last decade, which marked the beginning of state supervision in road construction and the first real impetus to the use of concrete in highway bridges, the state authorities were confronted with an awkward situation. Concrete bridges, unlike steel structures, may be built without the aid of a manufacturing plant. Consequently, advertisements of bridge lettings brought bids from all the concerns in the vicinity that had ever turned a shovelful of concrete. Statutory restrictions and political expediency made it necessary to award the work to the lowest bidder so long as he complied with the stipulations as to form of bid, certified check and surety bond, notwithstanding the fact that the amount of his bid established beyond question that he was bound to do the work at a loss. This actually occurred in the majority of cases because the experienced contractor who knew what the work would cost would not make tenders as low as the bidder who did not know the requirements. After a sufficient number of the contractors had learned an expensive lesson in the school of experience and after surety companies for similar reasons became more exacting in the choice of their clients, this condition was gradually corrected. In the meantime, it worked hardship on the engineering staffs of the state highway commissions, caused unending delays in the completion of structures and resulted in the construction of many inferior bridges.

This chapter from the history of highway engineering would be of no interest to railway officers if it were not for the fact that they are now confronted with an almost parallel situation. The present stagnation in building operations, following, as it does, a period of most extended construction activity, has enormously increased the competition among bidders for the limited amount of work now being advertised. Railroads that normally solicited bids from a half-dozen contractors are now being asked to supply plans and specifications to as many as 40 or 50 concerns. The impression gained is that every builder who ever erected a small dwelling or business building anywhere near the proposed work is now striving to get the contract at any price. The roads are receiving a flood of exceedingly low bids from firms that have never done work under any but the most casual supervision and are, therefore, entirely unfamiliar with the strict requirements for material and workmanship that prevail under the supervision of the railway chief engineer. Under the circumstances, the established railroad building contractors, who have constructed most of the railway structures in the past and must be depended upon to take such work during coming periods of normal building activity, are now frequently not among the low bidders.

This situation places the chief engineer in a serious predicament. He knows that the management is under a burden to conduct the capital expenditures with scrupulous economy, and that these are times of falling wages and falling material prices and he desires to take advantage of every opportunity to save money. At the same time he is under a burden to get the work completed within the allotted time, and to have it done on a grade of workmanship that is well up to the standards established by the road he represents. He also knows how difficult it is to secure these results with a firm of limited credit and mediocre organization.

By following the line of least resistance, as in the case of the highway bridges, this situation would gradually correct

itself through the eventual elimination of the irresponsible bidders. But in the meantime serious damage would be done which could not readily be righted. Fortunately, the railroads are not bound by precedent, politics or statutes to accept the lowest bid and this freedom of action, together with a thorough investigation of firms submitting tenders, the imposing of strict requirements as to surety bonds and advertisements calling particular attention to the established rule for the strict interpretation of specifications, should serve in large measure to keep the roads out of the difficulties encountered in public work.

Unfair Motor Vehicle Competition

THE RAPID EXTENSION of paved highways throughout all parts of the country and the introduction of the motor truck and the motor bus comprise the outstanding developments in transportation today. From the standpoint of the steam and electric railways it offers a new form of competition which must be recognized. It is also creating new and serious problems for the public, most important of which is the necessity for the formulation of a means of taxation of the trucks which use these highways for hire, that will return sufficient funds to make good the damage they do.

As a general average these highways are today costing \$30,000 per mile or more. Their construction is in general paid for largely by the owners of motor vehicles. Only a small percentage of the owners of motor vehicles use the highways for commercial purposes, but this small percentage is wearing out the highways more than all the other users of them. Not only are the commercial vehicles using these highways more continuously but, traveling as they are at high speeds and heavily loaded, they do more damage to the roadways in one trip than the average automobile will in many.

These motor trucks and motor buses are competing with the railways for the transportation of freight and passengers. The highways afford them right-of-way and roadway at only nominal cost. The railways have to build and maintain their own lines. They are also taxed heavily for the support of the public activities including highway construction.

The way in which this works out is illustrated in a striking manner in Minnesota, where the railroads are taxed at the rate of six per cent on their gross earnings. A new highway was recently completed between St. Paul-Minneapolis and St. Cloud, 65 miles at a cost of approximately \$30,000 per mile. Motor vehicles are taxed two per cent on their cost. On a motor bus costing \$5,000 the owner pays \$100 tax for a year's use of the highways. For every passenger hauled from St. Cloud to Minneapolis the railways pay the state approximately 14 cents. If the two railways which connect these cities hauled only 30 people a day from St. Cloud to Minneapolis and return, the tax collected by the state in two weeks would exceed the year's license paid by the average truck, or in 24 days they would pay the state over \$200, which is more than the highest priced truck pays for a year's use of the highways. There are many days in which the gross earnings tax on the St. Cloud-Twin City business of the railways amounts to more than a year's license for a passenger bus.

Such facts as these indicate the necessity for the enactment of legislation which will tax commercial motor vehicles on the same basis as other transportation agencies with which they compete. From the standpoint of the public these trucks should be classed as common carriers and be subjected to the same regulations as to rates, continuity of service, etc., as the railways. It is also only fair that commercial vehicles make good the destruction of the highways which they cause. With these provisions in effect and the public given the protection to which it is entitled, the activities of the commercial vehicle will be restricted to those fields in which it

can be operated with real economic benefit to the public. Within such limits the railways cannot object to competition, but until such regulations are enforced the railways and the public will suffer from the mushroom-like competition which resembles the jitney competition of a few years ago that did so much to injure the street railway systems.

New Books

Motor Truck Transportation. By F. Van Z. Lane, C.E., lecturer on Motor Truck Transportation, New York University. 6 in. by 9 in., 153 pages, 44 illustrations. Bound in cloth. Published by Van Nostrand Company, New York.

This volume is exclusively a discussion of motor trucks from an operating point of view. In it are discussed, in an exhaustive manner, the principles necessary to the economical and efficient use of such trucks. The book is divided into 15 chapters and the information presented is arranged in logical order and in such a way that information relative to a particular phase of the problem is readily accessible. The chapters devoted to motor truck transportation laws, cost records, motor trucks and the railroads, bodies, and loading and unloading devices, are well thought out expositions of these subjects and, moreover, are of particular interest to the railway officer concerned with the possibilities of the motor truck as used to supplement rail transportation. In other chapters the future of motor trucks is discussed, motor trucks are contrasted with horse-drawn trucks and the value of highway transport surveys is brought out.

Purely technical information relative to truck design and construction, etc., purposely has been omitted from this work and the volume better serves its purpose—the presentation of practical information on motor truck operation in usable form—because of this manner of treatment.

Freight Traffic Red Book for 1922. By Henry G. Williams and Charles J. Fagg. 494 pages. 8 in. by 11 in. Cloth. Published by The Traffic Publishing Company, 150 Lafayette street, New York City.

This book is well described, in its subtitle, as a practical reference book for either railroad men or shippers who are actively engaged in traffic work; and, for shippers especially, "an everyday guide; a condensed but comprehensive text book for the student of freight transportation."

The first thing in the book, following the list of abbreviations, is a traffic glossary. A glossary should serve, mainly, for the instruction of the primary class; but this one assumes a good deal of information on the part of the reader.

The next chapter is one for the post-graduate student, "rate factors." Thenceforward the authors dip into the practical side of the subject as looked at by the freight agent and the shipping clerk: classifications, rates, territories, rate bases and routing. Each detail is treated with great care and evidently with scrupulous attention to accuracy; demurrage, lighterage, reconsignment and so on. The chapter on rate bases fills 30 pages, and is an elaborate geographical essay. Rules and rulings of the Interstate Commerce Commission fill 82 pages and governmental regulation, its necessity and philosophy fills 10 pages. Following this, the Interstate Commerce Act, the Transportation Act, 1920, and other statutes are given in full, followed by the rules of practice before the Interstate Commerce Commission, chapters on express service and on export and import traffic, with 50 pages of other interesting details. Forms of bills of lading and other documents fill 50 pages more and, finally, 36 pages are taken up with five complete indexes.

It is the intention of the publisher to issue supplements, when necessary, to be sent free to subscribers, so as to keep the book up to date until October, 1922.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

Limitations of the "Middle Order"

OGDEN, Utah.

TO THE EDITOR:

Every dispatcher, every operating officer, must have read with interest Mr. Whitenton's article entitled "Eliminating the 31 Train Order," and Mr. Forman's advocating the use of the so-called "middle order" to catch 'em if they get away under the much discussed use of the 19 Form. I hope that the managements of all single-track railroads anticipating the elimination of Form 31 will, before adopting or depending upon the obsolete "middle order," take into consideration the percentage of communicating points as against those where there is no operator.

Consider, also, the staggering of points of communication by working an operator 12 hours—one-half of the 24-hour period—at one station and an operator at the next station working the other half. When the middle order is in effect at an open office and such office must be closed, under the federal law, before the trains meet, it must be annulled. Then the protection that is supposed to make the 19 order safe has been removed. It takes time to put out the middle order, even though the operator responds promptly; and that means much to the busy dispatcher. Many times it handicaps him in placing his orders and delays the trains; thus the use of the middle order to make friends for Form 19 defeats its own purpose.

If the 19 is not safe without the middle order, then it is not safe to make meets at non-communicating points.

We should not, in my opinion, advocate the use of the middle order. It is seldom used and will not be used unless dispatchers are continually watched; this for the reason that it is not practicable, and is a train delayer. It weakens our conductors and enginemen, for the reason that they depend upon it. If we cannot make the use of the 19 order safe without bolstering it up with the middle order and a block signal system, we should not use it for restricting trains.

WM. NICHOLS.

Twenty Years' Observation

MIAMI, Fla.

TO THE EDITOR:

I have read in the *Railway Age* of September 10 and October 15 and since, the various letters and articles on the abolishment of the "31" train order, particularly what Mr. Whitenton has to say in reference to this matter. I have also advocated for a number of years the abolishment of the 31 order. I have been a train dispatcher on single track railroads for 20 years and have watched this particular feature since I first started in the business; and I have never been convinced that the signature of the conductor, or of the conductor and engineer, added materially to the safety of the transaction. If the operator enters the numbers of the orders on the clearance card, with the safeguards that have been described, the dispatcher can check them just as easily as if the operator had given him the signature of the conductor.

When an engineer finds a red signal he must either see it turned to clear or procure an order or a clearance card. If

neither, he is then required to stop. Suppose the conductor and the engineer should both overlook the red signal; the fact that it is a 31 order has no bearing on the case. To require the signature of the conductor causes, with a long train, at least 20 minutes' delay.

The middle order is all right so far as it goes, but on the majority of single-track railroads open telegraph offices are few and far between, and it is impracticable to put orders out at the meeting points. Some rule could be easily worked out to take care of the order when sent to the superior train at the meeting point; say, restrict its delivery until the train has come to a stop.

I know there is quite a lot of opposition to the abolishment of the 31 train order, but I am satisfied in my own mind from practical experience that the 19 order, even without automatic block signals and the middle order, is just as safe.

E. P. McLAIN,

Superintendent of Transportation, Florida East Coast Railway.

Concerning "Official Goats"

CLEVELAND, Ohio.

TO THE EDITOR:

I have noted with some amusement, and considerable disgust, the letter entitled "The Official Goat," signed by "One of Them," in your issue of September 24. I wish to take exception to "the exception, and not the rule," as described therein. I put in about seven years as secretary to a chief operating officer. In all my travels in the business cars of various officers, from vice-presidents down the line, I never came in contact with one who treated his secretary in any but a businesslike and gentlemanly manner; and this not only applies to the man for whom I was working but to all of the officials I came in contact with; therefore I do not recognize the "typical day's bawling out" as outlined.

It is very evident that "One of Them" is either working for a man whose treatment of a secretary is not the rule, or he has a grudge against all bosses. It would seem that "One of Them" should look more to the mote in his own eye rather than to the beam in the eye of the boss. After nine years of such treatment, if "One of Them" had any backbone or pep he would get out and get another job. Evidently he is lacking in something.

While, no doubt, all secretaries sometime or other receive a "bawling out" from the boss, it has been my experience that after cooling off and giving the matter thought the secretary usually finds he had it "coming to him."

If the officer did not realize that his secretary had "sensibilities" and "intelligence," he would not be the secretary. Therefore, my suggestion to "One of Them" is that he try being "human" with the boss, stop criticising him, and get in the class with the well-treated secretaries of the country (fortunately in the majority).

EX-SECRETARY.

The Railroads and Public Opinion

EAST ORANGE, N. J.

TO THE EDITOR:

For the present the railroad strike specter has vanished from the public eye, but no one knows when it will return. It is the duty, if not a necessity, for the railroad managers to keep the public posted as to the railroad situation. It was public opinion which broke the last strike threat, and it will be the public which will play the lead-role in the next railroad crisis.

The railroads must see that the public knows all the facts and fully understands the particular problems, for if the public does not know the truth the professional labor agi-

tator and government ownership propagandist will so mislead and befog the public that it will not be able to perceive clearly the justice of the controversy and wrong will triumph over right.

What the railroads must do this winter is to adopt a campaign of educating the public to the real railroad situation. Let the railroad executives explain in the newspapers the questions which the public want answered, let the railroads send speakers into the different communities, and finally let the railroads insert advertisements in the daily press which will state conditions just as they are in language and in figures which everyone can understand.

Such a campaign would without doubt bring about a clearer perception of the railroad problem by the public. Where ignorance is, there suspicion is sure to lurk. The cost would be nothing compared with the results. The railroads belong to all the public and it is only fair that the public should be kept informed of all the policies and problems of the business in which it has the most at stake. Now is the time to adopt some such plan—not tomorrow, or the next week, but now.

A RAILROAD STUDENT.

Why College Men Fail on the Railroads

CHICAGO.

TO THE EDITOR:

The question of encouraging college men to enter railway service is attracting much interest with your readers. I entered railway service in 1882 with a granger road, owned in New England, and I was given a position because I was a college man. A relative who was interested in my future solicited the interest of a wealthy Bostonian of her acquaintance who was a director of a prosperous western railroad which operated in a developing country and whose board of directors had established a policy of recruiting its staff with young college men who could be trained in railroad work. Through him I was introduced to the president of the road who looked me over and asked me what I wanted to do. I replied, "Anything—I'll brake a freight train if you want me to." His answer, which will stay with me all my life was, "*Take hold* is all right, but *Hold on* is better." I was told to report to his office in a western city as soon as possible and after working there for about a month was transferred to an active department and put right in the thick of the fight, where I have remained ever since.

In casting up in my memory the names of other college men who started with this railroad, either before or after I did (the policy was continued well into the 90's), I can recollect 68 men. There were others, I know, but I cannot recall their names after the lapse of years. Of these 68, one has risen to the chairmanship of the board of a large railroad company, one recently retired as a general manager, one is a passenger traffic manager, one a secretary and treasurer. One rose to be a vice-president in charge of the operating department, quarreled with his president, resigned in a huff, took up other business and soon after died. Another rose to be the president of a railroad but suddenly resigned and has dropped out of railroad work.

Of the remaining 62 I am the only one, so far as I know, who has remained in railroad service. None of them to my knowledge has been very successful in any other business.

One had been appointed an assistant trainmaster and had resigned because the only place he could get board in the town where his headquarters were was a hotel patronized by coal miners and they were allowed to come to table in their shirt sleeves. This man has since risen to the position of mayor of a good-sized city, and I do not think any of the rest have gone even that far. Now these were selected college men, mostly from Harvard, Yale and Princeton (39 years ago the western colleges had not reached their present

standing), and it would appear that they "*took hold*" but did not "*hold on*."

The requirements of railroad service are probably more exacting than those of any other business or profession. Railroad companies expect to receive, and do get from their officers unwavering loyalty to the company's interest for 24 hours a day to the exclusion of social pleasures, family ties and everything else of a personal nature. Unless a man has the will to sacrifice every personal desire that will in any way interfere with the performance of the work he is employed on, he might as well give up the ambition to rise high in the railroad service. A year ago I spent a day on the car of a general manager. While we were at dinner he remarked that he had made his plans to have his Thanksgiving day dinner with his parents in a neighboring state. He had not been able to see them for four years and there was to be a general family reunion this year, which he was looking forward to, as it was quite an event. Soon after dinner we stopped for water and a handful of telegrams were brought in the car. As he read them a momentary flush of disappointment passed over his face and with the remark, "That's railroading," he handed me one of the messages which read:

"Sorry to spoil your plans for Thanksgiving, but must see you in Chicago Thursday morning. Important." It was signed by the vice-president. To this man discipline had become such a second nature that this, which was certainly a bitter disappointment, was simply passed over as all in a day's work. Would any lawyer, doctor, banker or manufacturer suppress his personal feelings in this way?

Again, the mathematical chances of securing a high position on a railroad are not bright. On a railroad with 40,000 employees the positions paying \$10,000 a year or more may be counted on one's fingers and toes. Until recently, too, the permanency of employment on a railroad, especially in the higher positions, was uncertain. Sudden changes of management brought with them sweeping changes in personnel. This occurs less frequently than formerly. In spite of all this, there is to certain types of character a fascination in railroad work, just as there is in seafaring, which keeps men who have once started at it in the service even in spite of the lack of personal freedom; the poor pay in the lower grades and the slim chance of reaching one of the higher positions.

There is no doubt that railroad managements appreciate the value of *educated* men and are constantly on the lookout for such, but here's where I pay my compliments to the modern college. The word "education" is derived from the Latin "*educare*," meaning to draw out, to expand, to enlarge. In the sense of our word this application is applied to the mental faculties. Now is it the practice of the modern American university or college to draw out, to expand, to enlarge the mental faculties of the student. I say, no. The system of elective courses by which an 18-yr. old boy, who knows about as much about his own capacity as he does about the planet Jupiter, picks out just what studies he proposes to pursue with a view to taking up some particular line of work in which he hopes to make money as soon as he graduates, is not getting an education, it is *learning a trade*. There is nothing mentally expanding or widening out in this. On the contrary it is narrowing. An Englishman once said to me, "You know, I don't understand your college men at all. They take up some specialty and are bully good men at that but when it comes to anything else, why they couldn't spell 'cat.'"

When a boy goes to college and simply studies civil engineering and on graduation accepts employment with a railroad he has in the first place narrowed his chances of promotion to one department only. The chances are that he will never rise higher than an instrument man, while if he has studied many subjects, thereby enlarging his range of vision and broadening his views generally, somebody is going to find it out and he will get opportunities of promotion in

other departments possibly better suited to him temperamentally. Our modern system of education is wrong as far as fitting men to rise in the world is concerned. It is all right to make specialists, hewers of wood and drawers of water all their lives because they have never learned to do but one thing; who will set grade stakes accurately, calculate strengths of material, make water softening tests, and do laboratory work generally.

After all is said and done the qualities which help men to succeed in life are born in them and not taught them. Self-control and self-discipline are two qualities most necessary to success in railroad work. The "Call Boy" has these driven into him from his start at 16 years of age, while the college man does not begin to learn them until he starts to make his living after graduation. Really educated men, whether self-educated or college-bred, barring the acquisition of bad habits, are pretty certain to succeed. They are indeed *rari avi*, but the possession of a college diploma is no guarantee of the possession of an education.

What with the adoration of the American girl for the college boy, newspaper head lines, the lack of real discipline (something that makes a man do things he does not want to do because it is his duty) in the colleges and in the police department of college towns where brutal rowdiness is winked at on the plea of being merely college prankishness, the average college graduate is the most egotistic, conceited person imaginable. This is an awful handicap to start life with and more often than not counterbalances the advantage of the education which even a good student may have received. If many of our colleges were as successful in filling as they are in swelling the heads of their students more college men would succeed, not only on railroads but in other walks of life. I do not believe there is any prejudice on railroads against college men except the prejudice they make individually through their conceit and lack of discipline.

Only a few days ago I had a letter from a large insurance company. In it was the statement that 85 per cent of the men in this country were dependent at 65 years of age; that they were failures. I think this holds good with college men as with others. Only a small proportion of each generation succeeds, as success is measured in this world. The others fall by the wayside whether college men or call boys.

I will add that I have been passed in my climb up the ladder more than once by "call boys," and some of them have trod on my fingers as they stepped on the rung ahead of me; but in looking the facts and my conscience squarely in the face, in every instance I recall, measured by the standards required by railroad service, I can only say, "You're a better man than I am, Gunga Din." ONE WHO HAS SEEN.

A Plea for Changes in Time-Worn Methods

BREWSTER, Ohio.

TO THE EDITOR:

No doubt every railroad manager has in mind plans for future development or improvement that would permit of resultant economies, but at the moment there appears the necessity for the reduction in expenses without further investment or increase of payroll, and it is thought the following suggestions may be helpful to that end. (1) The establishing and use of material standards for all departments. (2) The elimination of time-worn practice and form in the handling of correspondence, requisitions and vouchers. (3) Insistence upon the officers assigned to the various departments carrying full responsibility and liability for the duties assigned.

Possibly there are no departments at present that offer equal or greater opportunities for economies than the main-

tenance of way and of equipment. Furthermore, the universal establishing of standards of materials used in railway construction and maintenance to the same extent as are in force in the rules of train dispatching or car interchange, would permit the extensive reduction in store stock maintained and permit of economies, the magnitude of which is most overwhelming.

Standardization of practice and of materials is a lucrative field for those who are sincere in their efforts for economy. The standard practice of train operation is universal. We also see, to a degree, the advantages of standards of design exemplified in our car construction. No doubt the future will see still further application of universal standards for all departments of the railroads.

It is not beyond a possibility for the executives of the various regions to select men and give them the authority to establish standards of materials to be used in both maintenance of way and equipment. Such a plan, if followed, would eliminate many of the designs of track supplies that are various and wonderful, and result in a reduction of material stock as well as the cost of handling.

Many of the standards applied to car construction are the results of demands of business interchange; that is, the practice established the standards. However, in maintenance of way and other departments this incentive was not present and our railroads are now built and maintained largely with designs of materials that evidence the individuality of the officer in charge of the particular department, not to mention oftentimes material of various designs purchased to meet a rather limited authorized expenditure.

It is difficult to understand the necessity for the many different designs of rail section for rails of the same weight, used under like service and axle loading. Again, why should there be the many designs of angle bars, all for the same weight of rail? This also applies to the tie plates, frogs, crossings, signs and almost everything that enters into track and bridge construction. Equally so, do we find this variation in standards applying to our stationery, telephone and mechanical equipment. Conceive, if you can, the saving possible in materials, their use and supply, not to mention the advantage gained by the reduction in store stock, if it were possible to establish a limited number of standards for use in the various departments for the railroads as a whole.

We must necessarily maintain our present properties with like materials therein, until they have given us the expected life, or we are required to change them by the demands of service. But, for the future, is it not possible for the executives to agree to accept standards of maintenance of way and other departments, that should be established by the best thought possible to assign to this duty? Some of our larger railroads have created the position of engineer of standards, realizing its importance. Sooner or later, forced necessity for economy will drive us to uniform standards of materials as has been evidenced in the demands of business enforcing the car standards so necessary for interchange.

The more intensive personal application to detail by the respective officers in the various departments will be imperative, if the railroads are to show a balance on the right side of the ledger in the future. The establishment of practices as to form and method of handling much of our correspondence, has developed a condition that has been properly termed "red tape." This must be eliminated by more up-to-date methods in the handling of business, together with short cuts so as to avoid delay and complaint. Possibly next to the government the railroads are bound by form in the handling of their business from one office to another, to such an extent that promptness is an exception to the rule.

How many have given thought to the authority of the stamped signature of the superior officer, its far-reaching effect and the opportunity it gives for waste? It is not out of the ordinary to find in almost any storehouse, requisitions

for materials running into large sums of money that are covered with three or four stamped signatures of the officers superior to the one ordering and responsible for the use of the material. When one sees a requisition, voucher, pay check or the like literally covered with stamped signatures, it bespeaks an evidence of lack of confidence in the fellow handling the job for whom the material was ordered, and indicates a form of practice that does not check the expense incurred, but quite the contrary, results in delay in the passing of requisitions, together with relieving the man responsible for the request of the responsibility for its being supplied. Surely the more intensive application of personal attention to these details should result in economy and eliminate waste.

Let the respective officers carry in full the responsibility of the office assigned. If they are competent, give them the reins and eliminate the checking and rechecking of reports, requisitions and accounts, all of which, small in detail, are costly in the aggregate. Results are what should tell the story. Men like to be trusted, and generally speaking, when their interest and honor are appealed to, will respond. The attention to details, eliminating the unnecessary, is a field for endeavor that will result in a correction within ourselves of multitudinous small expenses, which, in the aggregate, will place the management among the successful.

JOHN C. SESSER,

Engineer Maintenance of Way, Wheeling & Lake Erie.

Boiler Compounds and Anti-Foam Compounds

DANVILLE, Ill.

TO THE EDITOR:

I have read with much interest the article by C. R. Knowles on The Interior Treatment of Boiler Waters in your issue of Nov. 12, and also the editorial comment on the same subject. It appears to me that there is a possibility of confusion between those compounds which remove scale and those which prevent foaming, which confusion may work a great and unintentional hardship to the cause of treated water. This confusion is enhanced by the editorial interpretation of the article as a comparison between boiler compounds and treated water, a viewpoint which hardly seems to be justified.

In his article the author touched on four separate and distinct methods of improving water, viz., softening plants, hit-and-miss internal treatments for scale, technical internal treatments for scale, and technical internal treatments for foaming or anti-foaming compounds. The reader may be in doubt whether the author is considering primarily internal scale treatments or internal anti-foam treatments although in the use of the term "boiler compound" in the editorial, there can be no such doubt since common usage has designated the term boiler compound as one which is applied for the treatment of scale only.

Foaming is caused primarily by the character of the natural water supply. If properly handled, a water having a small percentage of sulphate salts will not foam unduly, whether treated or not. Likewise, even though properly handled, a water having a large amount of sulphate will foam, whether treated in a softener or with a scale-removing compound. In either case it will not foam so badly if an anti-foam compound is used. Indeed, it is probable that the anti-foam compound will need to be used just about as often, if not more often, with the internal scale treatment than with a properly conducted softener, since in the first case there is a great excess of mud, and in the second case a moderate excess of foaming salts. It is hardly fair to compare the cost of an anti-foam compound with the cost of softening on the basis of foaming alone, since the softener

removes scale and prevents flue leaks and the accumulation of excessive mud deposits, while if the anti-foam compound does any of these it is only by accident.

Internal treatments which are designed to prevent foaming are entirely different chemically from those which are designed to check the accumulation of scale. Anti-foaming materials are all based on the action of castor oil and its ability to increase the surface tension of the water. Theoretically it never gets below the surface of the water and therefore never comes in contact with the scale or scale-forming salts. Internal scale removers are composed of soda ash, sodium silicate, tannin, tri-sodium phosphate, barium salts, etc., none of which has any effect in increasing the surface tension and some of which act to lower it decidedly. Mixtures of the two into one compound have not proven very satisfactory and neither one can be substituted for the other.

Mr. Knowles quotes eight examples showing the benefits of internal treatment. The first four of these refer to the benefits of using anti-foaming compounds although it is not stated whether the basis of comparison was raw water, treated water, or water treated with anti-scale compounds. The use of anti-foam compounds is admitted to be good practice where water persists in foaming in spite of all that can be done and any experienced person will agree with the author in his contention that an anti-foam compound is more economical than foaming, but it is not clear just what bearing this agreement will have on the subject of boiler compounds and treating plants. It can hardly be claimed that a castor oil, anti-foam compound unsupported by any anti-scale method of treatment, is more economical than a softener when scale, leaks and foaming are all considered.

The fifth and sixth examples deal with the use of the "proper interior treatment" as against soda ash when used alone. If the soda ash under consideration was used as a boiler treatment, the argument comes under the author's heading of hit-and-miss treatment vs. technical applications, but if used in a softener it is more of an indictment of the operator since the mixing of a little lime with it would have probably improved the water. It is fairly safe to say that soda ash alone should never be used in a softener because of the unnecessary expense involved, considering the small amount of improvement to be obtained. The last two examples appear to be comparisons of the anti-scale compound with raw water since if a softener had been in service, and had been operated properly it would, of course, have removed all scale. It is doubtful if an anti-scale compound will be much, if any, superior to a softener in the prevention of foaming when neither one is backed up by an anti-foaming mixture.

The confusion of the article, it seems to me, lies in the fact that the first half deals with scale-removing treatments and most of the last half with anti-foaming treatments, without the change of subject being clearly marked. Looked at in this light, I am inclined to agree with many of Mr. Knowles' statements, but it seems to me that there is some danger of the reader obtaining the impression that the saving in the various examples was obtained by the abandonment of a softener and the substitution of an anti-foam mixture. This is so widely at variance with the general experience of those handling water softeners that it hardly appears to be tenable. It is admitted that a strict interpretation of the term boiler compound might be all-inclusive, but common usage has limited it to the action of scale removal only and the term should be used in the sense in which it will be interpreted. If there is any possibility of an impression, therefore, either in the article or its editorial interpretation, that the use of a softener entailed the expenses shown in the examples, it is well to correct such an idea in the minds of any who are hesitating between a choice of the two methods of water treatment.

W. H. HOBBS,

Water Chemist, Chicago & Eastern Illinois.

The Care and Protection of Lumber in Storage

Sanitary Precautions to Prevent Decay

The Building of Piles and Protection Against Fire

By H. A. Sackett

Assistant Purchasing Agent, Chicago, Milwaukee & St. Paul

MUCH OF THE DISSATISFACTION with timber, particularly car lumber, is wrongly charged to assumed inherent weaknesses of wood in general, or certain species, where in fact carelessness in handling is responsible. The cause quite frequently is poor storage facilities, which lead to checking, warping, decay, casehardening, etc. Finished metal products and even raw material is given adequate protection against the elements and natural deteriorating influences. If similar precautions were taken with lumber, which often is a very highly finished product, not only would its use give better results but considerable waste could be stopped.

Failures that are mostly traceable to incipient or advanced decay before use are generally attributed to inferior quality of lumber. It is true that the constantly widening use of wood has resulted in the cutting of smaller timber than was the practice a generation ago, and that many mills now utilize practically every stick of timber available which naturally results in a larger volume of inferior grades. If greater care had been exercised in wood utilization in the past, which includes handling from the mill to ultimate consumption, the actual loss would probably have been reduced 30 per cent. It behooves everyone responsible for lumber stocks to practice such diligence as will minimize the deterioration and loss occasioned by careless handling in storage.

Storage Yard Improvements

Most roads have established concentration and storage yards for lumber and wood products. Some are admirably laid out and maintained; others resemble more a typical junk yard, selected not because of their suitability for the purpose but apparently because they happened to be in the way. The suggestions that follow are conservation measures designed to protect the very considerable investment represented by the average stock of timber and lumber carried day in and day out by the average road.

The first step is to rid the yard of all refuse, particularly odds and ends of old rotten wood, to remove all grass, weeds and vegetation of every sort. Then the site should be graded as nearly level as possible with at least six inches of cinders, gravel or slag to insure prompt seepage of such moisture as may collect from heavy rains, rapid thaws or overflow. In some localities drainage ditches, at required intervals, would greatly aid maintaining a reasonably dry yard.

Fungi Infections

Several years ago the United States Department of Agriculture investigated timber storage conditions throughout the country for the purpose of making available data that would assist in controlling the enormous waste due to deterioration of lumber in storage, which it found chiefly to be caused by decay, communicated from infected material to originally sound stock. To quote from the report, * "There are two general methods by which wood destroying fungi spread from infected to sound lumber: (1) by a direct outgrowth of mycelium from an infected stick to adjoining or nearby timber, and (2) by the blowing about of spores produced by the

*See Bulletin 510. United States Department of Agriculture.

fruiting bodies or by the mycelium.

"In wholly or partially enclosed moist spaces, such as are often found in poorly ventilated lumber piles, the mycelium finds sufficient moisture in the air to allow it to develop on the surface of timbers and in this way may progress along the timber for considerable distances. Such may be the case, also, where timber is closely piled; the writer has records where severe infections have thus passed during rainy weather from the bottom upward through piles 12 to 15 ft. high. In lumber storage sheds, or in the base of close piles the mycelium of several species of fungi has frequently been observed developing in great abundance, not alone on the moist foundations and lower layers of lumber; but also spreading profusely on the soil.

"The chief purpose of spore formation in fungi just as



A Horrible Example: Vines Permitted to Grow Over Lumber Piles—Courtesy U. S. Department of Agriculture



Courtesy of U. S. Department of Agriculture

Partially Rotted Hardwood Will Infect the Adjoining Stock by Contact

in seed formation in ordinary green plants, is a perpetuation of the species through reproduction. Spores serve the two-fold purpose of tiding the fungus over unfavorable periods and allowing their rapid spread under favorable growth conditions. Nature is lavish in her methods and the number of spores produced is often enormous. For instance, Buller computed from partial counts that each pore of the underside of *Polyporus squamosus* produced in the course of a few hours an average of 1,700,000 spores, or a total of over eleven billion for the entire under surface of a fruit body having an area of 250 square centimeters (38.75 sq. in.)."

A lumber yard should be systemized, and arranged as carefully as a store house, where castings of various types

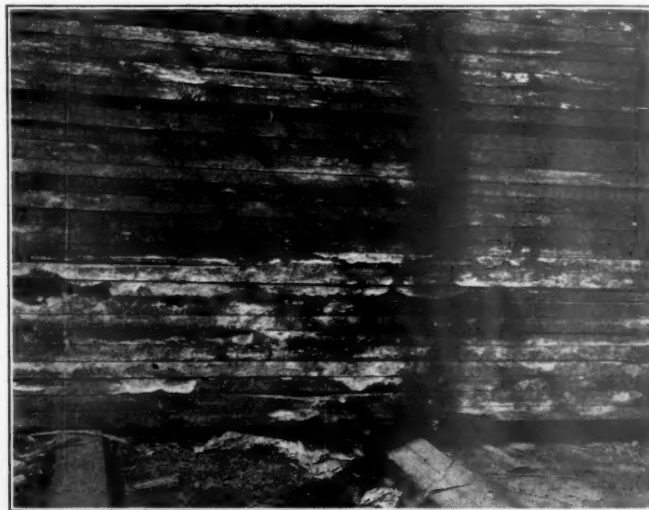
and sizes, nails, screws, bolts, nuts, etc., are placed each in its designated bin, drawer or shelf. Lumber should be piled according to size, first by cross-section and then by length. Each species should be separated, and each class of material be assigned a section of the yard. Maintenance of way material should be in one group, including bridge timbers, switch ties, bridge ties, piling, rough lumber, etc., car lumber in another group, and so on. Finished and kiln-dried stock should always be stored under cover in sheds with at least three sides as protection against driving rains and snow as well as intense heat. Proper ventilation is also important. Every pile of lumber should be plainly marked to indicate contents and purpose for which it is to be used. Such identification cards can be arranged to act as a stock record upon which withdrawals and additions can be noted, thus giving a clear record of stock on hand at all times. This suggests that a special lumber storekeeper may be required. And when the value represented by an average railroad lumber yard is considered, what objection can be offered to this suggestion? If the issuance of lumber and its maintenance in proper condition during storage were given as much attention as is devoted to practically all other materials used on a railroad, many thousands of dollars now dwindling away in small leaks of waste and deterioration could be saved.

The site for a lumber storage yard should be carefully chosen. Low ground or "made land" should be avoided. It is practically impossible to keep such a yard reasonably dry and free from collecting bogs and pools of water, and in localities where overflow is to be expected standing water may reach to the pile bottoms, or even beyond, for weeks at a time.

Another desirable feature is reduction of the communicable

and automatically unloaded onto the pile. In addition there should be narrow gage tracks for small lumber trucks on which the stock when issued is moved from the pile to the shop. When transshipped to some other point on the system it can again be loaded directly on the work cars which, without rehandling the lumber, are switched to the work train. In the alleys and at required intervals between piles, at right angles to the main tracks narrow gage tracks should be laid for the lumber trucks. Wherever possible the grade of the yard should be in one direction so that the loaded lumber trucks, which are usually moved by manual labor, will have the aid of gravity when being moved with loads toward the shop.

An arrangement as outlined would permit the use of locomotive cranes for handling timbers, and gasoline or electric motors for hauling the lumber trucks. In fact, careful plan-



Courtesy of U. S. Department of Agriculture

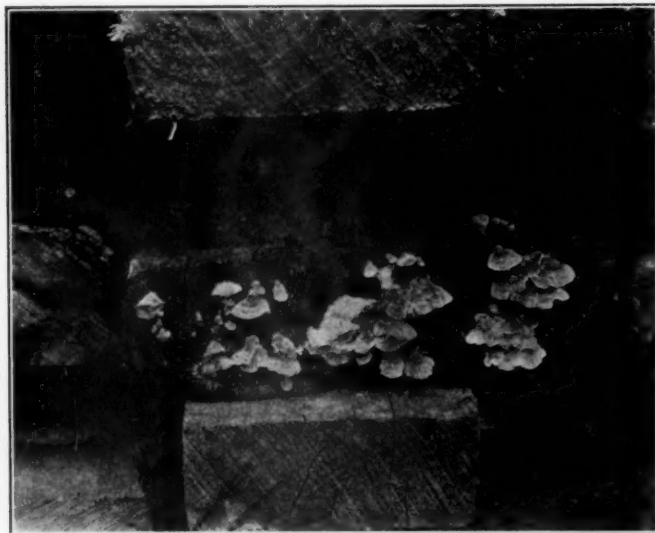
Badly Infected Pile of Three-Inch Hard Pine

ning of a new lumber yard will so reduce the amount of manual labor required that the cost of handling can be more than cut in two, which will not only pay for the extra mechanical equipment needed, but will solve the problem presented by a scarcity or poor quality of labor.

Spacing of stock piles and proper clearance for tracks are details that must be adapted to the conditions that are individual to the yard. In every case care should be taken that ample space is provided to allow for the use of either gravity, or automatic loading and unloading devices, as well as the handling of lumber and timber by manual labor.

Foundations for Lumber Piles

Whether the yard is old or new there can be but one suggestion for bearings; they must conform to modern sanitary requirements. The ideal foundation for lumber piles consists of concrete piers and creosoted timber sills. The tops of the piers should be at least 18 in. above the ground and the treated bearing sills about 6 in. by 8 in. in sections. Another less permanent type of bearing is shown in one of the illustrations. This may be built of salvaged timber providing it is absolutely sound, and after framing should be treated with at least two coats of heated creosote oil. Where better methods of treatment are available these should be used but in any event some such protection must be given all lumber used in pile foundations. This bearing consists of ground pieces *A* which may be plank 2 in. to 3 in. thick, from 6 in. to 12 in. wide and about 2 ft. in length; risers *B* which should be at least 6 in. in height, or more as required, and may be of one piece or several as is most convenient; bearing *C* which may be made of almost any available ma-



Courtesy of U. S. Department of Agriculture

Fruiting Body of Fungus Growing on Hardwood Lumber in Position to Spread Infection to Sound Stock Above

fire hazard by isolating the yard as much as practicable from other industries or localities where such a condition may be expected to develop within the immediate future.

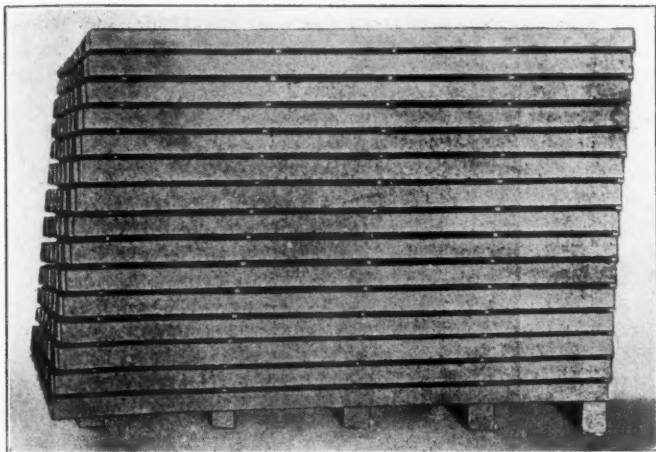
High ground is unquestionably an ideal location, not only because this provides the best drainage, but also because a better circulation of air is obtained which aids seasoning and will keep lumber in better condition.

Trackage

The service tracks should be so laid out that handling is reduced to a minimum. The yard should be platted in blocks, each block facing standard gage tracks on which lumber is delivered in the original cars direct from the mills

terial but should not be less than 4 in. by 6 in. in section, and should rest on at least three foundations. Almost any sound lumber may be used, but it must be preserved with creosote.

Numerous types of bearings can be made suitable. The important point with each, however, is that it must itself be proof against infection by decay if it is to prevent the communication of such infection to the lumber piled upon it. It

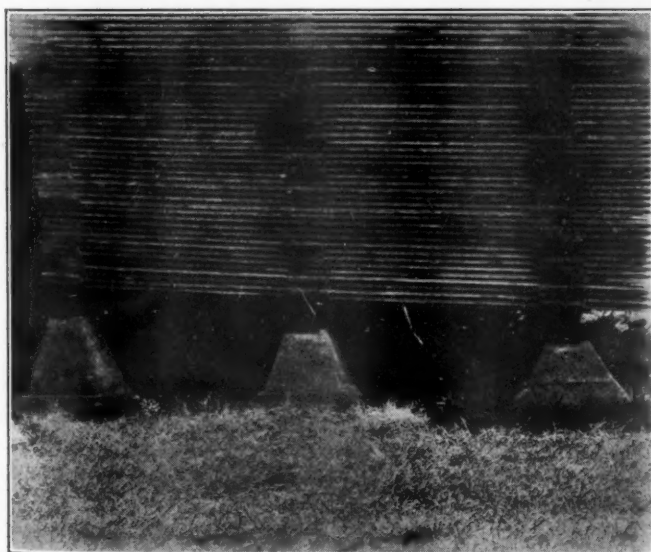


Courtesy of U. S. Department of Agriculture

Method of Piling Timbers. Showing Stripping and Overlapping of Ends

must, of course, also be of sufficient strength and rigidity to carry the required load without sagging, and to provide the proper pitch to the pile so that it will freely shed water, and resist wind pressures. The slope of all lumber piles should be in one direction, preferably towards the "face" side of the alley.

The piling strips should be sound lumber and such as



Courtesy of U. S. Department of Agriculture

Concrete Foundation Piers and Timber Sills

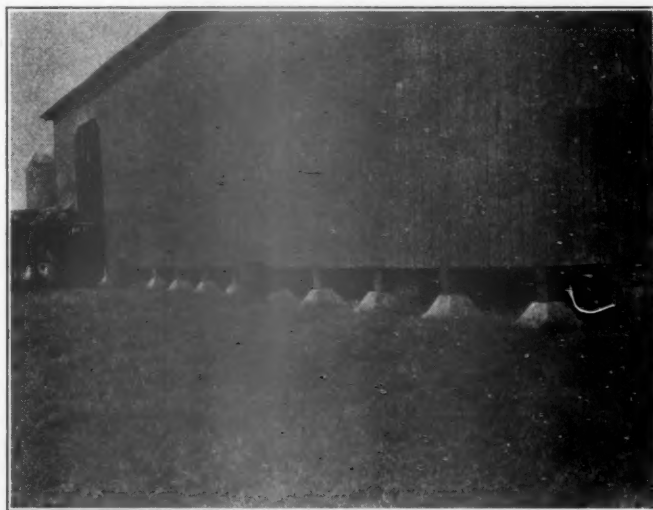
are used for timber and rough lumber should be creosoted. Piling strips should never be allowed to accumulate between lumber piles or in the alleys. Likewise, damaged sticks or waste lumber should be removed immediately and disposed of; otherwise the best planned yard will fail to meet the chief requirement, i. e., maximum sanitation.

Properly built sheds with ample room to allow for the necessary working space should always be provided for kiln-

dried stock such as car siding, car lining, car roofing, car flooring, building siding, ceiling and flooring, dry poplar, ash, mahogany and quartered oak. The shed foundation should be either of concrete or creosoted timber, substantial and so constructed as to keep the lumber well off the ground. The roof must be tight and the siding should not run down below the bottom of the foundation sills or bearing pieces so that a free circulation of air is permitted from all sides beneath the enclosure. If fungus outbreaks occur in the shed the soil and timber immediately adjoining the infected area should be sprayed or painted with an antiseptic solution of a water soluble salt like sodium fluoride, mercuric chloride, zinc chloride or copper sulphate.

Method of Piling

In the piling of all lumber, care must be used to have the piles substantially constructed to prevent them from falling apart or being blown over by wind storms. The sides or edges of the piles should be straight and parallel, both horizontally and vertically. Piles of boards and 2 in. plank should not be built wider than the length of the lumber in the pile, and in no case should the width of the pile exceed



Courtesy of U. S. Department of Agriculture

Ideal Storage Shed. Built on Concrete Piers and Set High Off the Ground for Ventilation

16 ft. Plank over 2 in. in thickness and all timbers should be piled in narrow piles from 6 ft. to 10 ft. wide, although piles of the same kind of material may be placed upon the same bearings closely adjoining each other. This arrangement permits the complete removal of a pile without waiting to exhaust the entire stock of one size and provides space for piling receipts of new stock without piling it on older or seasoned lumber.

In piling dressed boards and kiln-dried 2-in. plank in sheds it is permissible to strip only between each five layers. In piling out of doors similar material which has not been kiln-dried, as well as all heavier lumber, strips must be used under each layer in all cases.

In piling 1-in. and 2-in. lumber, pieces of the stock itself should be used for piling strips, but in larger sizes strips 1 in. thick and not over 1 in. wide should be used over each bearing, except the one strip on the face of the pile, which should be 1 in. thick and 2 in. wide.

The piling strips should be no longer than the width of the pile. No strips should be allowed to run through from one pile to another. One piling strip should be used over each bearing piece upon which the lumber rests and should be placed directly over the bearing piece or the strip previously applied. The edge of the strips used on the front

of the pile should be allowed to project over the ends of the lumber upon which it rests at least $\frac{1}{8}$ in. This will act as a drip cap and assist in preventing the ends of the lumber from checking or splitting. The ends of each course of lumber applied to the pile should be brought flush with the edge of the piling strip at the front of the pile. By following this method the pile will have a forward pitch of about $1\frac{1}{2}$ in. per ft., which together with the slope of the pile, will prevent the accumulation of moisture from rains or snows.

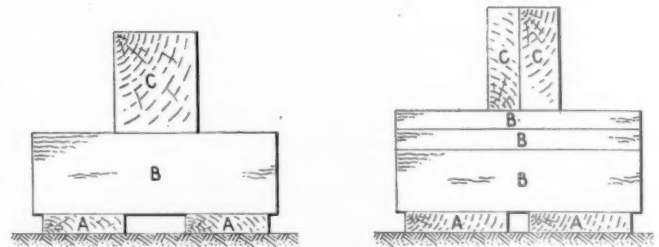
Except where piled in a shed all lumber should be separated in the layers so that a space of approximately $\frac{3}{4}$ in. is left between pieces to allow of free circulation of air on all four sides of the pieces. This permits of rapid and thorough drying of the lumber and prevents sap staining and rot. Lumber so piled may be allowed to remain in stock for a long period without damage. This space may be easily regulated by instructing the workmen to allow the width of a finger between the edges of pieces.

All boards and planks dressed on one side which are stored out of doors, should be piled with the dressed side down. When similar lumber is rough on all sides the side of the piece nearest the heart of the log should be down. This will retard checking of the lumber and opening of shakes in the course of seasoning.

In piling lumber 2 in. and under and of miscellaneous lengths the entire pile should be of the length from front to rear of the longest piece of material in the pile. Thus, if 1-in. lumber 8 ft. to 16 ft. in length is being included in the same pile that pile should be 16 ft. long and should

All piles of 1-in. boards, poplar and hardwoods of all thicknesses, dressed car flooring and 2-in. plank not under roof should be protected from sun and rain by a covering of rough boards laid in two courses with the cracks in the lower courses lapped by the boards in the upper course. This cover should be laid on strips so that it will be about 6 in. above the top of the pile at the front and 2 in. at the rear. Care should be used to have this cover always in place when the pile is not being worked.

In removing lumber from piles in the yard, that which has been on hand for the greatest length of time should invariably be taken first. Lumber should always be taken



Lumber Bearing Built of Sound Salvaged Material

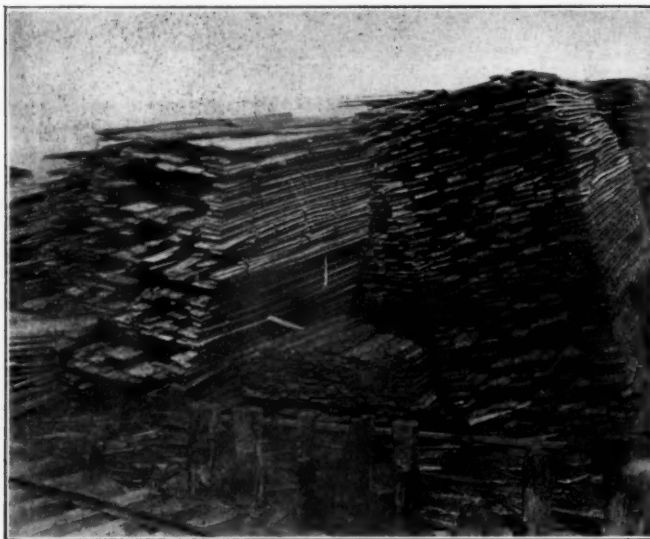
from the top of the pile and in no case should workmen be allowed to break into the side of the pile to avoid the effort of going to the top and removing and replacing the cover.

Fire Protection

Adequate protection against fire is merely common sense. In addition to keeping the yard clean of accumulation of debris, which provides the greatest fire hazard, water should be always and everywhere available. New yards should always be equipped with high pressure water mains, hydrants and sufficient hose so that practically every foot of the yard can be immediately flooded. In addition to keeping this equipment in perfect working order the workmen in the yard should receive thorough training in its use by fire drills which are ordered by the regular fire alarm, previously unannounced.

Where such apparatus is not available water barrels should be distributed throughout the yard at convenient points and strategically disposed so as to be most effective in an emergency. A fire pail should be kept at each barrel and additional pails, ready for instant use, at suitable points. It is obvious that the barrels must be kept full of water, and that they must be inspected frequently. The water in the barrels can be kept from becoming stagnant or from freezing by dissolving in each barrel from 100 lb. to 150 lb. of calcium chloride (common salt). Barrels should be kept covered with well fitting but readily removable covers to prevent excessive evaporation of the water. The most suitable barrels for this purpose are those in which creosote oil is shipped. Tarring the tops will keep the salt from creeping. Barrels should be painted a bright red as identification.

All of these precautionary measures are summed up in the old and well worn but, alas, only too little applied adage, "a stitch in time saves nine." Not alone does the proper handling and protection of lumber before utilization provide real, tangible economy; it is likewise effective conservation which from the standpoint of the greatest good to the largest number is far more important than individual profit. The workmen who must carry out these details is as much profited as the employer who may derive the immediate benefit, because every stick wasted decreases the available supply just that much, which means greater scarcity and higher prices; and high priced lumber always touches every pocket.



Courtesy of U. S. Department of Agriculture

Conditions Caused by Failure of Decayed Foundations, Creating Fire Hazard and Waste

be even at both ends. This is accomplished by bringing the ends of the shorter lengths alternately to the front and the rear of the pile.

By this method a ragged appearance of the rear of the pile is avoided and there is no waste due to warping and checking of the ends of the longer pieces projecting unprotected from the rear of the pile.

If the quantity of such stock will warrant having two or more piles it would be desirable to pile the 14-ft. and 16-ft. lengths together and the 8-ft., 10-ft. and 12-ft. lengths together.

All rectangular sizes 5 in. in thickness or over, whether rough or dressed, should be piled on edge. This includes car sills, car framing, guard rails, caps, stringers, bridge and switch ties, heavy joints, etc.

More About Ford's Railroad Operating Methods

Difficult to Check Flivver King's Claims Because of His Not Filing Statistics

By Harold F. Lane

WASHINGTON, D. C.

HENRY FORD is still revolutionizing the railroads, on paper, but as he is much more fond of reporting his achievements and his rosy predictions for the future than of filing his own reports with the Interstate Commerce Commission, it is becoming somewhat difficult to check up his statements by which he demonstrates the inefficiency of the other roads. In his latest exposition of the virtues of the Ford principles, in an interview distributed by the International News Service on December 3, Mr. Ford says that freight is now moving over the Detroit, Toledo & Ironton at the rate of 45 miles per day and that when he has finished doing things that are now under way freight will be moving over his road at the rate of at least 200 miles a day. His latest report to the Interstate Commerce Commission, that for the month of August, showed an average movement per freight car per day on the Detroit, Toledo & Ironton of only 20.7 miles, as compared with an average for the railroads of the country of 22.7, so we are left in some doubt as to whether he has effected this great improvement in such a short time or whether he is as careless in using his own figures as he is regarding those of the roads generally. To emphasize his point he gives the railroads generally credit for only 20 miles per car per day, whereas the average for the first nine months of this year, which, because of the light traffic was low, was 21.9 miles and for September it was 23.8 miles.

The Matter of Car Miles Per Day

Mr. Ford says that when he bought the D., T. & I. its cars were making only 19 miles a day, but he omits to say that for the month of March, in which he took over the actual management of the road, the average was 27.8 and that there was a steady decrease up to and including August, the latest month for which the D., T. & I. has reported, to 20.7 miles. This was slightly less than its average for the corresponding month of 1920. Of course, as was pointed out by Walker D. Hines in his article in *The Nation's Business*, the average of miles per car per day is by no means conclusive of the speed obtained in the movement of cars actually handling traffic, because the average is based on all the cars which happen to be on the railroad at the time, whether they are moving in trains or waiting to be loaded, unloaded or switched, and include also the surplus cars. The average freight train speed for the railroads as a whole for the first nine months of 1921, according to the Interstate Commerce Commission reports, was 11.6 miles per hour. If the D., T. & I. has made such a large increase in its average car mileage as Mr. Ford says, it is very likely due to an increased demand for automobile parts which gave more cars something to move for, but here again we find that, in his efforts to reduce book-keeping, Mr. Ford is omitting to make the usual reports of car surpluses, shortages, loading, etc., to the American Railway Association, and thereby declining to place his figures in comparison with those of other roads.

To the extent to which increases in the car mileage per day do reflect increased efficiency, it would be very interesting if Mr. Ford would tell some of the reporters who trail him about some of the operating methods which result from what is vaguely described as the "Ford principles" or the application of "common-sense" methods. Unfortunately the only method we have heard of that he has actually applied

for the purpose of speeding up cars and avoiding delays has been his plan of requiring, as a shipper of freight in train-loads, that the connections of the D., T. & I. take the traffic off its tracks within 20 minutes or let some other road have it. What happens after that, as Mr. Hines says, is not his problem but theirs, and it is obvious that the same special service cannot be given for every car of freight.

Mr. Ford says that red tape is responsible for a good deal of "this slowness," by which term he describes the difference between an average car movement of 23 miles per day and a train speed of 11.6 miles per hour, but he refrains from telling us how he has avoided or untangled the red tape.

Alloy Steel Cars

"The excessive weight of the train," he says, "is responsible for some more," and he much prefers to enlarge upon that factor, possibly because it offers greater opportunity for his expansive imagination. However, he is becoming more conservative on this point as he goes along. A while ago Mr. Ford told the world that a freight train is "several times the weight of the load it carries." He has now toned this down to what is more in accordance with the facts, that the weight of the average freight car is almost equal to the load it carries. That this is so is generally the fault of the load which the shipper puts in the car, but in predicting an average car movement of 200 miles a day, Mr. Ford says he is preparing to build cars in which two-thirds of the weight will be sacrificed without sacrificing any of the car capacity by using alloy steel. This car, he says, can be built as cheaply as present cars because although the steel costs more, only one-third as much will be used.

While awaiting with great interest the advent of the flivver freight car, which by the way has not made its appearance, except in print, in the nine months since Mr. Ford became a railroad president, we have also had time to wonder how, when it does arrive, it will revolutionize railroading unless Mr. Ford will also solve the problem of keeping the new cars fully loaded and in movement all day. The present freight car is quite capable of more than 200 miles a day at the present average rate of speed, but even "multiplying the carrying capacity of the railroads by 10 without increasing the equipment and without additional cost" will hardly solve the problem. The average freight car does not move 200 miles every day without hitting a terminal of some kind where more or less delay is encountered before it can again be started in the right direction and most of the time the roads have excessive car capacity which does not move at all. Railroad officers are constantly working to try to minimize the inevitable delays and if Mr. Ford would offer some constructive suggestions as to how this problem could be met, or even as to how he claims to have solved it for himself, beyond such broad statements as "keep the cars moving," they would listen to him with more respect when he attempts to make newspaper readers "realize how inefficiently our railroads are run" by inaccurately comparing what they do with what he could do if he tried or what he says he is going to do.

Mr. Ford also expects to reduce by 75 per cent the amount of coal burned by locomotives and says he has made such changes on one of the old D., T. & I. engines as to reduce the fuel used by 50 per cent. He also is making experiments

to see if he can't burn the coal in the mines and thereby obtain benzol with which to do away entirely with the coal-burning locomotive, claiming that he has already made an engine run 70 miles an hour on that fuel on his railroad. Various devices are advertised for which it is claimed that they will effect nearly as great an improvement in the performance of a brand-new Ford engine but we do not understand that they have yet revolutionized Mr. Ford's business.

We Must Not Take Mr. Ford Too Seriously

It is well not to take Mr. Ford too seriously, although his habit of spilling his loose thoughts for the benefit of the reporters on every possible occasion undoubtedly spreads much misinformation on important subjects among people who do take it seriously. Even when his lighter freight car is brought out and a trial run is given with great publicity to demonstrate that it can travel faster than 20 miles a day or carry a given load with complete success, it will still take several years to ascertain its possibilities under the strain of actual service, such as its cost of maintenance and its life. It may take as long as it took Mr. Ford to equip his car with such newfangled contraptions as self-starters and electric lighting. It may be noted that almost as many people have what they consider practical suggestions for the improvement of the Ford car as have ideas as to how the railroads ought to be run, yet Mr. Ford does not allow himself to be seriously disturbed by them even when others put them into practice.

Ford says he does not believe the railroads of America "can be properly run except under government ownership," and the reporter says he expressed pain when requested to boast to the extent of saying whether he could run all the railroads, but he finally overcame his modesty sufficiently to say that if all the railroads of the United States were under his control, "I could run them all as easily as my own." He would "send word to the D., T. & I. gang to extend their principles to all other lines," but he also expressed the belief that even under private ownership American railroads will soon follow his example and cut down the weight of their cars two-thirds.

Railroad Millennium Possibly Not So Far Off

Perhaps the railroad millennium which Mr. Ford pictures is not so far off as it appears. One of his reasons for desiring government ownership is that "nobody should get a cent of railroad income except those who work on the roads and earn it." Our experiment in government operation during the war was restricted in some ways but it came very near to realizing this ideal. If our present hopes of an improvement are not realized (and government regulation is not meanwhile extended to the prices and profits of the flivver industry) it may yet become possible for Mr. Ford to buy the roads at a bargain, as he did the D., T. & I. and thereby have an opportunity to work out the Ford principles on a broader scale without the necessity for government ownership.

Opposes Repeal of Rate Law

WASHINGTON, D. C.

THE CHAMBER OF COMMERCE of the United States is preparing to oppose vigorously any movement that may be made in the present session of Congress to repeal provisions of the Transportation Act which authorize the Interstate Commerce Commission to make rates to provide adequate revenue for the railroads and to regulate intrastate rates where necessary to prevent discrimination. The position of the national chamber is that these provisions of the act should not be repealed until they have had a fair test. In a communication sent to the constituents of the chamber, Joseph H. Defrees, president, said that the pass-

age of such legislation as the Capper or Nicholson bills would be "a long step backward." According to Mr. Defrees, "enactment of the proposed legislation would repeal those sections of the Transportation Act by which the Interstate Commerce Commission is directed to establish rates that are reasonably adequate to the railways and just to the public. The railroad committee and the officers of the national chamber are firm and fixed in the opinion that these proposed laws would be extremely injurious to the railways and detrimental to the public good."

President Defrees points out that the rate-making provisions of the act give no guaranty whatever to the railroads. "Statements to the contrary are misrepresentation," he says. "If rates even under the most honest, efficient and economical management do not yield the return specified in the act, the amount of the shortage is lost to the railroads. Not a cent is payable to the carriers from the federal treasury, and the deficit cannot be made up from rates subsequently established."

"If the Interstate Commerce Commission is deprived of all authority to regulate intrastate rates as proposed in the Capper bill, rate regulation will return to the chaotic condition which existed for many years because of the conflict of authority between the Interstate Commerce Commission and the 48 state commissions."

"To repeal the two vital provisions of the Transportation Act which are now attacked is to overthrow the system of rate-making which the Interstate Commerce Commission has developed after long study and out of wide experience. It is the opinion of some able lawyers who testified at the hearings that the proposed bills would take from the Interstate Commerce Commission any power to prevent discrimination by the states against interstate traffic. Experience and wisdom have shown the necessity of the interstate rate being paramount and of a yielding of the state rate when it discriminates against the interstate rate. The letter of the proposed statute and the spirit of it seem to make the state right paramount and to force the adjustment of interstate rates to the rates which may be made by the state commissions of all the states, and it is at least highly probable that this result will be accomplished if the pending bills are enacted into law."

"The Constitution of the United States has always recognized the paramount importance of national control of commerce between the states. The repeal of those provisions of the Transportation Act which assert federal authority over state rates would in effect limit national control over interstate commerce in every instance where state regulations conflict with interstate regulations."

President Defrees' communication calls attention to the fact that "the railways are now in a depleted condition and that there is need for the expenditure of millions of dollars for proper maintenance and equipment. The country is growing in population; and there is need and there will be constantly growing need for an expansion of the railways. This need for expansion can be met only if they can market their securities. If the railways can receive no adequate return it is at once obvious that they cannot market their securities. The corollary follows that they will fall into a dilapidated condition and their facilities will be insufficient to supply the public needs. Not only would this be a disaster to the railroads as business enterprises, it would be a calamity affecting in a most serious way every shipper and every consumer. This condition would beyond doubt tend inevitably in the direction of government ownership."

THE PROVINCE OF QUEBEC grants for agricultural purposes about \$1,000,000 yearly, and has spent \$5,000,000 in colonization to open up the northern districts of the province.

Texas Attack on Transportation Act Argued

Constitutionality an Issue—Asks That I. C. C. and Labor Board Be Enjoined

WASHINGTON, D. C.

ARGUMENTS were heard by the United States Supreme Court this week on the original bill filed by the State of Texas attacking the constitutionality of the Transportation Act and asking that the Interstate Commerce Commission and the Railroad Labor Board be enjoined from enforcing it in a way to interfere with the jurisdiction of the state authorities.

A. P. Thom Files Brief

Declaring that the only power denied the states by the Transportation Act is the power to fix intrastate rates that discriminate against interstate commerce, Alfred P. Thom, general counsel of the Association of Railway Executives, in a brief filed as *amicus curiae* asks the court to sustain the constitutionality of the statute.

The Texas authorities attack the constitutionality of the sections of the act relating to the regulation of state rates, the so-called rate-making section, the sections relating to the establishment of the Railroad Labor Board; to the extension and abandonment of lines of railroad and the sections relating to pooling of freights or earnings and consolidations.

In his brief, Mr. Thom asserts that the case is not justiciable because the order issued by the Interstate Commerce Commission under the act and attacked in the proceedings "inflicts no injury," adding that it is "not fair to jurisprudence to attempt to settle great constitutional questions, like those presented here, on abstract considerations not involving definite complaints of wrongs to persons or property."

"Aside from the objections on the grounds mentioned, the bill is without equity and is based on what, we respectfully submit, is a misconception of the constitutional justification of the Transportation Act and of the lawful rights and authority of the parties," the brief says.

A Supervisory Power Over Intrastate Rates

"The Interstate Commerce Commission was given by the act," the brief continues, "direct and primary jurisdiction to fix interstate rates, but only a supervisory power over intrastate rates to be exercised only if the states failed to establish intrastate rates which would not give preference to their own traffic over interstate traffic and would not unjustly discriminate against interstate commerce."

"The only power over state rates denied to the states by Congress was the power to establish an unjust discrimination in favor of their own traffic over interstate traffic and to require the use of the instrumentalities of interstate commerce in their intrastate transactions in such manner as to affect injuriously traffic which is interstate."

"Manifestly, interstate commerce would be injuriously affected and unjustly discriminated against if it could not use the instrumentalities used by both on terms as favorable as intrastate commerce could—if interstate commerce had to pay the bill for maintaining, up to the national standard of adequacy and efficiency, the agency which was used interchangeably by both, while the state refused to make an equitable contribution. If the standard of adequacy expressly fixed by Congress in the act must be supported out of the rates derived from both classes of traffic and the states could decline to bear their equitable proportion, either the Congressional standard must be abandoned, or the deficit caused by the refusal of the state must be made up

out of increased interstate rates—and thus, in either case, the states would effectually regulate interstate commerce. No interpretation of the act which would accomplish this result can be accepted.

"The interstate commerce act confers upon the Interstate Commerce Commission the power to judge as to this discrimination, and to remove it, if the action of the states results in such unjust discrimination.

Removal of Unjust Discrimination

"It is equally obvious, from another standpoint, that the act must be interpreted as authorizing the removal by the Interstate Commerce Commission of any unjust discrimination, created by a state, against interstate commerce, or any portion of it, in favor of intrastate commerce, or any portion of it.

"Unjust discrimination may exist, and does exist, whenever interstate commerce is injuriously affected by the more favorable terms on which intrastate commerce is permitted to move. The more favorable terms on which intrastate commerce may move, as compared with interstate commerce, may exclude the latter from markets which each is seeking, or from producing fields on which each is depending.

"It is accordingly submitted that, from whatever standpoint the subject be viewed, the act must be interpreted, in its provisions as to state rates, as conferring upon the Interstate Commerce Commission a power, and a power only, to see that all unjust and unreasonable advantages of state over interstate commerce, and all unjust discrimination of state against interstate commerce, are removed, and that there be no substantial inequality of commercial opportunity to the prejudice of interstate commerce in the use of the instrumentalities of interstate commerce.

"It cannot be successfully asserted that the powers conferred by the act, as to interstate rates and as to unjust discrimination against interstate commerce, are not within the constitutional grant of power made to the national government by the states to regulate interstate and foreign commerce.

The Method of Rate Making

"Nor can valid criticism be made of the method of rate-making, by groups, prescribed in the act. It is the method which was adopted and followed by the commission before the act was passed. It is the only method possible.

"It is difficult to understand why the contention should now be insistently and gravely made that if Congress undertakes to regulate or fix the intrastate rates of an interstate carrier, it is invading the reserved rights of the states and violating the tenth amendment of the Constitution.

"It cannot be denied that the power to provide for, foster and protect—all of which are involved in the power to regulate—includes the power to fix the standard of efficiency and adequacy of the means or instrumentalities for carrying on interstate commerce. That standard—the national standard—must be supported out of all the traffic, state and interstate, of the carriers. If a state disapproves of the national standard and may, by fixing state rates so low as to make an inequitable and inadequate contribution to the support of the interstate agency, it has the power to impose its standard on Congress, or to throw on interstate commerce and the commerce of other states, or on both, the burden of sustaining the national standard of efficiency and

adequacy. In either event, Congress would be denied the exercise of its constitutional authority, and the state, not the nation, would be supreme in the national field.

Brief Filed By Texas Authorities

The bill filed by the Texas authorities says in part:

Complainant avers that the Railroad Labor Board and the Interstate Commerce Commission, without power or authority, constitutional or otherwise, are each exercising functions, powers and authority attempted to be given to each of them respectively by act of Congress in the "Transportation Act of 1920" and are making findings, entering orders, and attempting to enforce its provisions in accordance with said act and several sections herein referred to, and are claiming and intend to exercise power and authority under said act and said several sections thereof.

Labor Board

That the acts of the Railroad Labor Board in fixing wages, salaries, establishing working conditions, practices and regulations of the various employees of the railroads of the United States and of the state of Texas have caused an enormous increase in the amount of railroad operating expense; and that its orders in force and effect at the present time have resulted in unnecessary, unreasonable and unjust wage to many of the employees of the said railroads within the state of Texas; that such salaries and wages are out of proportion to wages paid for like services in other and similar positions and employment, paid and received by the people of the state of Texas, and is an unjust and unreasonable demand upon the railroads of the state of Texas resulting in the necessity for and an increased operating income; and complainant further avers that by reason of such unjust, unreasonable wages, salaries, working conditions, practices and regulations, the Interstate Commerce Commission acting under the pretended authority of the Transportation Act in order to create and obtain for the railroads of the state of Texas an operating income pursuant to the Act of Congress of 1920 above alleged, and sufficient to pay the wage scale and carry out the practices and regulations so fixed and maintained by said Labor Board, has fixed fares and charges for the transportation of passengers and freight which are unjust and unreasonable. All of which causes and has caused a great loss to the producers and shippers of the state of Texas, a great diminution of freight and passenger traffic to the railroads of the state of Texas and has caused and is causing a great financial loss to the people of the state of Texas, producers, shippers and carriers alike in violation of the constitutional right particularly guaranteed to them by the fifth and fourteenth amendments of the Constitution of the United States.

Certificates of Convenience and Necessity

That the Interstate Commerce Commission has granted certificates of convenience and necessity to railroads within the state of Texas authorizing and directing them to cease operation of trains and to dismantle their railroads and dispose of their physical property contrary to the Constitution and laws of the state of Texas, and in disregard of their contract obligations with the people of the state of Texas, and particularly of the vicinities through which such railroads pass. That the Interstate Commerce Commission has refused to grant certificates of convenience and necessity and to permit railroads within the state of Texas to advertise and charge fares and freight rates and to receive passengers and freight from connecting carriers and transport same in accordance with the laws of the state of Texas, and has refused to permit the construction of railways within the state of Texas by persons and corporations who have complied with the Constitution and laws of the state regulating the chartering, organization, construction and maintenance of railways wholly within the state of Texas. That the Interstate Commerce Commission is exercising the powers attempted to be granted in the Transportation Act to supervise and regulate the issuance of bonds, certificates and other securities by the railroads of the state of Texas when so issued in accordance with the Constitution and laws of the state of Texas regulating the issuance of bonds, certificates and securities; that thereby the railroads of Texas and the people of Texas are compelled to submit to the demands and conform to the rules and regulations of the Interstate Commerce Commission at an unnecessary expense and great inconvenience resulting in the loss of property and in the taking of their property without due process of law contrary to their right guaranteed under the Constitution of the United States.

And that the Interstate Commerce Commission is making rates, charges, fares, issuing orders, regulations and schedules

and establishing practices requiring and compelling the railroads of the state of Texas to comply and conform thereto; and that the said Interstate Commerce Commission has issued an order placing the state of Texas in what is designated as the "Western Freight Group" and has and will continue to require the railroad companies of the state of Texas to charge and control fares, rates and charges contrary to the statutes of the state of Texas and its Constitution and valid contracts of said railroad companies, all of which acts, orders, rules and regulations are contrary to the statutes and Constitution of the state of Texas and the United States, and as heretofore alleged, the railroads of Texas are now and will be called upon to pay more than their just share upon property within the state to supply the operating income demanded by the railroads of the United States; that said Interstate Commerce Commission intends and will whenever it deems it necessary and desirable, authorize the creation and operation of trusts, combinations and monopolies among railroads in Texas without regard for the Constitution and statutes of Texas relative thereto, and thereby the people of the state will be deprived of their right to have competing carriers and freight competition; that the state of Texas in its sovereign capacity is being sued and has been and will be sued and made a party to suits involving the rights, powers, privileges, sovereignty and property of said state before the Interstate Commerce Commission of the United States contrary to the Constitution as herein alleged.

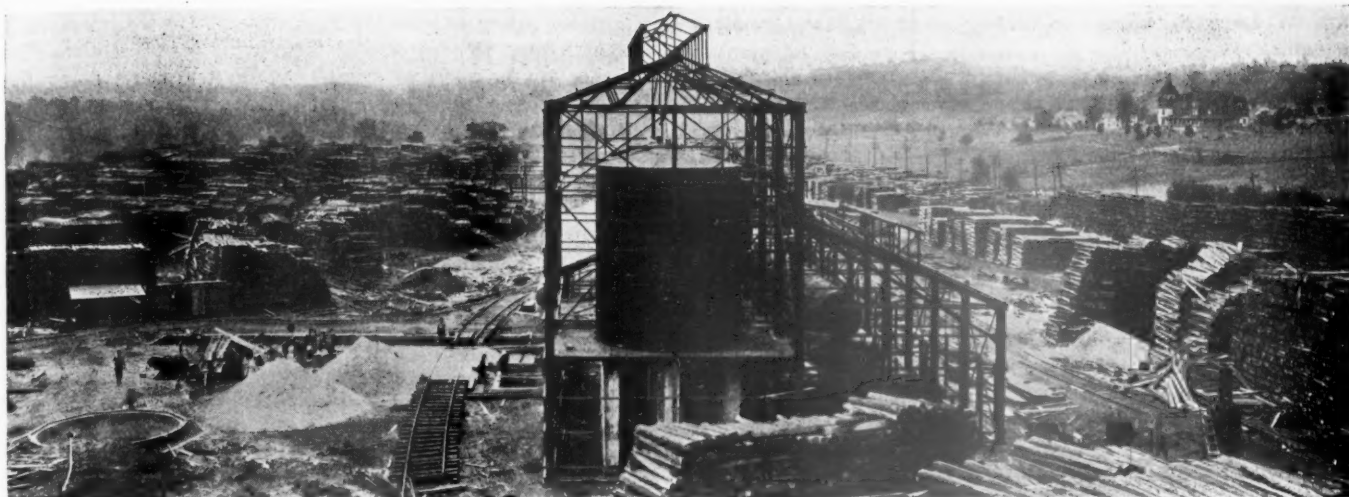
State Sovereignty

Complainant further alleges that great and grievous injury and damage is resulting to it and its citizens by reason of the enactment of the act of Congress known as "The Transportation Act of 1920"; that it is shorn of large powers of sovereignty, viz.: legislative, executive and judicial powers reserved to it by the Constitution of the United States, and it is deprived of privileges and immunities guaranteed to it as a sovereign under the Constitution of the United States, and that citizens situated in the boundaries of Texas and that its citizens and railroads are unauthorized to do and prohibited from doing acts and things otherwise legal and lawful except for the provisions of said act and the acts of the defendant herein.

Forasmuch, therefore, as complainant is without adequate remedy at law and its only protection in the premises must arise from the powers of this Honorable Court, in the exercise of its original jurisdiction, the state of Texas respectfully prays that there be granted a writ of subpoena issuing out of this Honorable Court to be directed to the Interstate Commerce Commission by service upon its chairman, Edgar E. Clark, to the Railroad Labor Board by service upon its chairman, R. M. Barton, the defendants herein named, demanding them and requiring them and each of them to appear and answer thereto, but not under oath, answer under oath being expressly waived; and that the so-called Transportation Act of 1920, and particularly Sections 300 to 316, inclusive, 402 to 407, 416 and 418, 402, sub-divisions 18 to 22, 407, subdivisions 1 to 8, 422, subdivisions 1 to 18, 439, subdivisions 1 to 11, be declared invalid, unconstitutional and void; and that the defendants named herein and constituted bodies corporate be declared and adjudged illegal and without statutory or constitutional authority; and that any and all laws or parts of laws, directing, empowering, regulating the creation, appointment, qualification and terms of service and granting authority to defendants named and the several members thereof be declared invalid, unconstitutional and void and the acts, orders and all things authorized to be done or performed by defendants be declared void, invalid and of no force and effect and without force of law, or if any part of said Transportation Act of 1920 be held to be constitutional, the remaining sections and portions thereof and all other laws in aid thereof be declared invalid, unconstitutional and void; and that the defendants and each of them be enjoined and restrained from enforcing all or such invalid and unconstitutional portions of the laws herein complained of in the state of Texas in such a manner as to interfere with the regulation of internal affairs of the complainant and the enforcement of its Constitution and its constitutional and valid laws, regulations and contracts, and the constitutional rights of its citizens, and that complainant may have such other and further relief as to this court may seem just and equitable in the premises.

The Wisconsin Case

The Wisconsin case was also reargued in the Supreme Court this week. The case was originally heard last spring but the court called for a reargument after the inauguration of Chief Justice Taft.



General View of the Plant and Yards During Construction

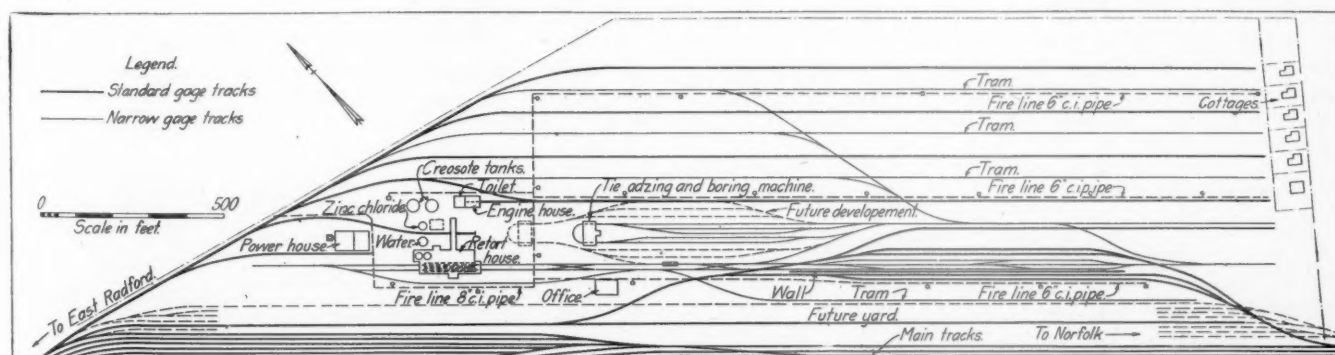
Norfolk & Western Goes to Treated Cross Ties

New Wood Preserving Plant Built by This Road at East Radford, Va., Contains Many Advanced Features

EACH YEAR sees an increase in the use of treated timber and, in particular, of treated ties. The Norfolk & Western is one of the large railroads that has recently made a study of wood preservation and the result of its investigation is evidenced most clearly by the construction of a thoroughly modern treating plant and facilities at East Radford, Va. Heretofore this road had used no treated ties and for the present it will continue to use untreated white oak ties in its heavy traffic tracks, although about 70 per cent of its tie requirements will be met with treated ties. Outstanding among the many interesting features of the plant are its capacity of 1,500,000 ties annually; its

line. It is about centrally located on the system. The area selected lies between the present railroad tracks and the bank of the New river and comprises about 50 acres of sloping land that required considerable grading after which it was covered with a six-inch layer of cinders. The plant facilities consist of a power plant, retort house with treating and storage tanks, etc., a laboratory and office building, an adzing and boring house, a pumping station, a large storage yard and a full layout of standard and narrow gage tracks, living quarters for employees and other miscellaneous buildings and equipment.

It is the intention of the Norfolk & Western to season all



General Layout of the Treating Plant and Yard

adaptability for utilizing four different methods of treatment, if necessary; the method of handling all preservatives by air; and the duplication of all units to give flexibility and independence.

The chief tie wood which the Norfolk & Western will use is red oak, easily procurable in quantities in the territory served by that road but principally on its Bristol line. This formed one of the main reasons for locating the plant at East Radford, the others being the advantages of a central location and the acquisition of a tract of land suitable for the purpose. East Radford is on the Bristol line about two miles south of Walton, the junction of that branch with the main

ties for a period of approximately one year, after which they will be treated and shipped out immediately, no storage for treated timber having been provided except in a very small degree. The plant as a unit has been laid out to correspond with this method of handling, the area upon which it is located being divided roughly into two longitudinal sections as is shown in the plan. The buildings, the 36-in. narrow gage tracks, the loading tracks and the loading docks have been located in the section nearest to the railway tracks. Another factor which influenced the design of the layout was the desire to separate the standard and narrow gage tracks so as to avoid any conflicting movements and to provide a meas-

ure of independence in operating over the two trackage systems.

In following out this plan, the tracks were laid alternately standard and narrow gage at intervals of 60 ft., with four lines of each serving the storage yard proper. In other words there is a standard gage track every 120 ft. across the yard. A ladder at one end connects all standard gage yard tracks while a narrow gage track running diagonally across at about the center of the yard provides for the moving of the trams to the adzing and boring house. In addition to this trackage, there is a complete system of narrow gage tracks leading to the various buildings mentioned as well as to the loading tracks and the loading docks, the latter being served also by standard gage tracks.

The tie piles have been arranged not only to give accessibility, both in stacking and in the loading of the trams, but likewise to provide adequate ventilation for seasoning and fire protection. Each pile is five ties long, perpendicular to the center line of the tracks with an alleyway $3\frac{1}{2}$ ft. to 4 ft. wide separating it from the one adjoining. Every sixth pile has been omitted, thus forming a roadway across the yard approximately 17 ft. wide. As one of the measures for protection against fire a 100-ft. opening was left at about the center of the yard across its full width. The ties are generally delivered in box cars from which they are unloaded by hand, although the piling is handled by locomotive cranes equipped with 40-ft. booms.

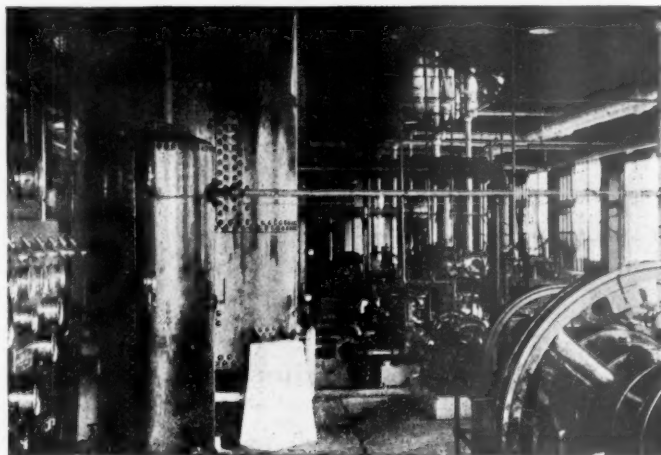
The tie yard equipment at present consists of 128 extra heavy tram cars, a 20-ton steam dinkey, one locomotive crane and two Angier tie loaders for use with the treated ties. All main track ties are adzed and bored before treatment. In connection with and in view of the increase in the amount of heavy rail on the Norfolk & Western, that road has adopted a larger tie plate with a 1 to 20 cant and measuring 7 in. by 11 in. in area by $\frac{3}{4}$ in. thick in place of the old flat 6 in. by $9\frac{1}{2}$ in. plate. The equipment for adzing and boring is housed in a well-lighted structure, is electrically driven and has a capacity of about 300 ties per hour.

Ties are brought in on trams operating on a high level track and are unloaded onto a conveyor leading to the machine, which, after the work is completed, discharges them onto trams on the opposite side. The outbound track is at a lower level than the inbound and is connected to it by a loop line running around the rear of the building. The movement of the empty trams is by gravity. The trams containing the adzed and bored ties are then made up in strings of 16, each containing from 40 to 45 ties, and moved to the retorts.

One of the most important features of the plant is that it

is possible to use any one of four preservative treatments and to switch over to any one of them with practically no disturbance to the regular routine, these treatments being the straight creosote, the Rueping or empty cell process, the Card or the zinc chloride and creosote process and the straight zinc chloride treatment.

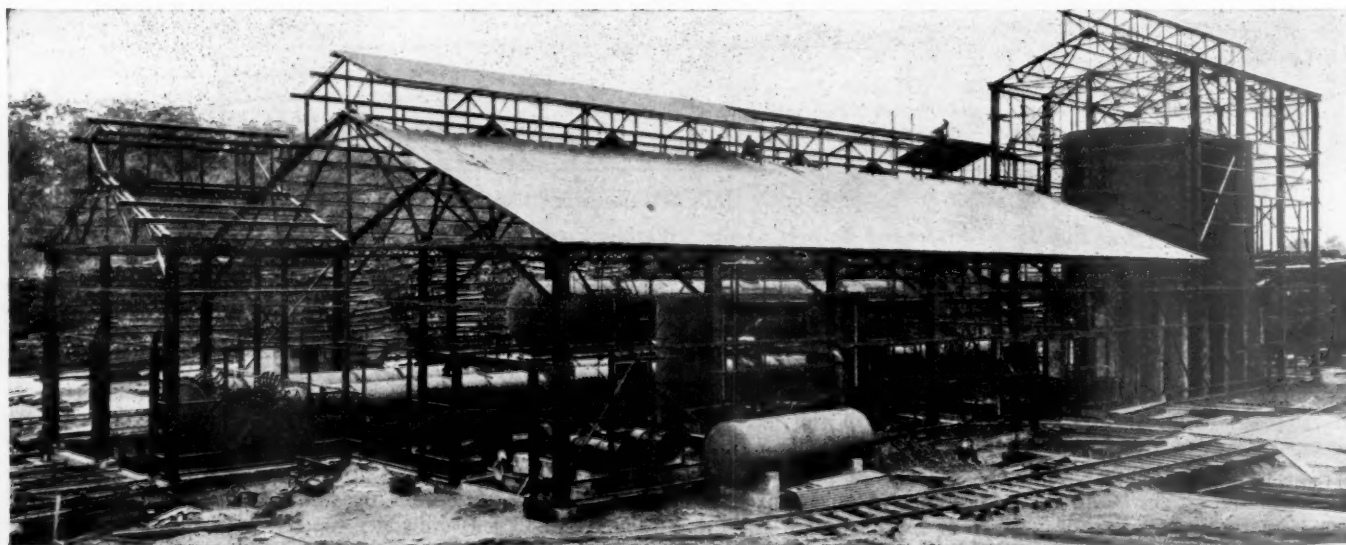
The plant and facilities for treating are housed practically in one building having concrete foundations and floor with a steel superstructure covered with corrugated sheet iron. The treating retorts, of which there are two, measuring 7 ft. in diameter and 140 ft. long, are situated along one side of the building and have superimposed on them a third tank of lesser dimensions and 35,000 gal. capacity for use with the



The Interior of the Retort House Is Clean and Well Lighted

Rueping process. Centrally located in the retort house and closely adjacent to the treating cylinders are two vertical pressure tanks equipped with various measuring gages to determine the rate of absorption and other factors. At one end two working tanks, each of 55,000 gal. capacity, are located in an elevated position and feed the retorts by gravity. These tanks are equipped with heating coils and measuring and temperature gages. They are also piped for use with the Card process and are equipped with a perforated air line to agitate the solution.

At right angles to the line of the retorts and on the opposite side of the building is an underground tank of 30,000 gal. capacity in a covered concrete pit partly within and partly without the building. This tank is utilized for un-



Showing the Full Complement of Equipment in the Retort House

loading oil direct from cars, after which it is blown up into two storage tanks outside; and also for receiving the oil dropped from the retorts when the treatment is completed. In the latter case the oil is blown back up into the two working tanks mentioned. Additional facilities for the storage of oil or zinc chloride solution consist of two 200,000 gal. covered tanks fitted with steam coils and water seal protection and a 20,000-gal. concrete tank for zinc chloride.

The space provided for the installation of the three air

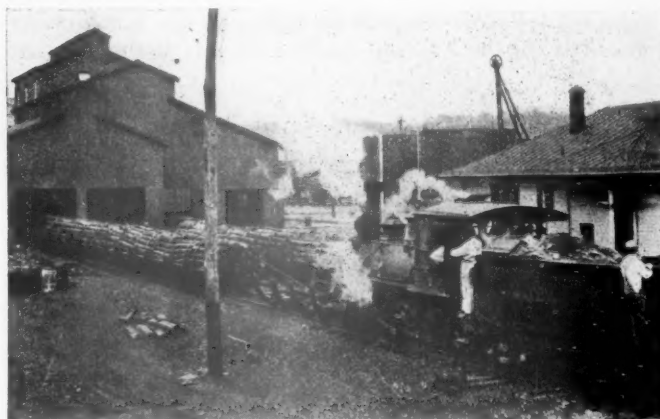


Constructing the Concrete Cribbing Along the Loading Dock

compressors and two vacuum pumps is large and affords plenty of room in and around all parts of the machinery. The piping arrangement is equally openly laid out and is further simplified by giving each line a distinctive color. The air, water and oil pipes are respectively white, brown and black in color while the steam lines are asbestos covered. The air equipment consists of one compressor delivering 1,000 cu. ft. per min. at 100 lb. pressure and two delivering 300 cu. ft. per min. each at 200 lb. pressure, corresponding to the requirements of the various processes. The vacuum pumps maintain a vacuum of from 24 in. to 25 in. which, at the elevation of 1,800 ft. at East Radford, corresponds to about 26 in. at other and more nearly sea level installations. These units work independently of each other and may be used in connection with either treating cylinder, thus rendering the handling of the processes in each of the retorts a separate and independent proceeding. The same pressure that is

tunnel. The building is of brick and concrete fire-proof construction and is divided into two sections. At the present time the boiler room contains three 300 h.p. horizontal return tubular boilers equipped with automatic underfeed stokers, while provision has been made for a fourth or reserve unit which will be installed when needed. Coal is delivered over a hopper track from which it is elevated and conveyed by a conveyor system to a large, overhead, parabolic, steel hopper with chutes leading to the stokers. Ashes are dropped into concrete pits beneath the boilers and from there they are picked up and elevated by the same conveyor mentioned, to an ash storage bin over the hopper track.

The engine room is equipped with two 750-kw. steam turbines direct-connected to 3-phase 60-cycle generators delivering 2,300 volts at 3,600 r.p.m. Directly under the engine room is a basement containing the condensers, and the pumping equipment for delivering water to various parts of the plant. The water system is complete and flexible in ar-



Drawing a Charge. Laboratory and Office at the Right, Storage Tanks in the Background

angement. The source of supply is the New river from which the water is drawn and pumped to the power house.

The pumping plant at East Radford contains two electrically-driven centrifugal pumps, each with a capacity of 1,200 gal. per min. The requirements of the condensers are about 1,200 gal. per min., leaving an ample margin to take care of other needs. Much of the water used in the con-



Some of the Cottages Furnished the Employees of the Treating Plant

built up during treatment is used for blowing the oil through the various parts of the system.

Power is furnished by a plant built as a part of this tie-treating layout although intended to serve other and outside purposes. Steam, and electric power as well, will be delivered to the engine terminal and shops at East Radford and current alone to the block signal system and to a nearby

condensers is pumped out for other purposes, the entire water system including lines to a 200,000-gal. concrete tank at the engine terminal and a 50,000-gal. tank at the treating plant. When these storage facilities are filled the excess water from the condensers is returned to the river.

The fire pumps, which are located in the basement of the power house, draw water direct from the main water line

from the river and deliver it to the yard through two 6-in. mains. Two-way hydrants are located every 300 ft. along each of these mains in covered structures or hose houses, each containing three 50-ft. reels. Additional fire protection is secured by water barrels placed at each intersection of the standard gage track and the 17 ft. roadways. A layout of fire alarms, telephones, gongs and watchmen is contemplated to round out the system of yard protection.

A modern fire-proof office building has been constructed near the retort house which contains offices for the superintendent and his staff as well as a chemical laboratory and office for the resident or plant chemist. The equipment in the laboratory includes various pieces of apparatus of the latest design and is unique in that all ovens, hot plates and other similar devices are operated electrically. In addition to this layout, a small experimental cylinder with full accompanying equipment is installed in the retort house.

A lavatory provided with separate rooms for white and colored employees adjoins the treating plant and a bunk house located at one edge of the yard provides living accommodations for the laborers. At the extreme end of the yard



The Installation of the Coal and Ash Conveyor Is Clearly Evident Here

the railroad has constructed a two-story house for the plant superintendent and a series of one-story or bungalow-type houses for his staff. All houses are electric lighted, have running water and are connected with the yard sewer system.

The plant was designed by and constructed under the direction of J. E. Crawford, chief engineer, and his assistant, W. P. Wiltsee, who made the necessary studies and was in general charge of the work. The power plant and other buildings were designed by F. P. Turner, bridge engineer, O. V. Parsons, assistant engineer, being in direct charge in the field. All questions of a chemical nature were under the direction of J. H. Gibboney, chief chemist. The retort house and its equipment, together with other accessories, were designed and constructed by the Allis-Chalmers Manufacturing Company, Milwaukee, Wis. White & Wood, contractors, Roanoke, Va., did all the concrete work, track-laying and other miscellaneous work in connection with the construction of the plant, while John P. Pettyjohn & Co., contractors, Lynchburg, Va., built the power house and office building. H. C. Bell, who has also been connected with the construction of the plant, will be the superintendent in charge of operation.

SIX PASSENGER TRAINS were snow-bound in the Columbia river gorge on the night of November 21, on the lines of the Oregon-Washington Railroad & Navigation and the Spokane, Portland & Seattle roads. The storm was characterized as the worst in the history of railroad operation through the gorge.

A Heavy Day's Work on the C. P. R.

THE HEAVY movement of grain eastbound from Winnipeg over the Canadian Pacific on one day in October (the 25th), which was noted in issue of November 12 (41 trains—1,579 cars), was about 70 per cent greater than the average daily movement in October. An officer of the road has sent us the following particulars of the movement:

"Owing to the different classes of power used, it was necessary to break and make up trains to suit the different classes of engines supplied to handle this traffic east from Kenora and Ignace, which are the two intermediate divisional points between Winnipeg and Fort William. This section is called the Kenora division; it is 419 miles, divided into three subdivisions: the Keewatin subdivision from Winnipeg to Kenora, 126 miles; Ignace subdivision from Kenora to Ignace, 146 miles, and the Kaministiquia subdivision from Ignace to Fort William, 147 miles. Trains are operated by train orders over train dispatchers' telephone circuit, and without block signals. The Kenora division is practically all double track. On a 40-mile section, viz.: between Winnipeg and Molson, although operated as double track, the lines diverge to such an extent that in order to give a return service, it is necessary to run a daily passenger train against the current of traffic. The figures given represent the number of loaded freight cars moved out of the initial terminal on the date in question.

"No mishap of any kind occurred, notwithstanding that there was a train on each 5.6 miles of line between Winnipeg and Kenora. The record is remarkable in that it was a natural one; there was no holding back to accumulate cars with which to make a record; and when the 1,579th car had left Winnipeg at 11:50 p.m. there still remained 1,419 east-bound loads to be moved.

It was not necessary to borrow any power from any other division, as when traffic conditions fluctuate, it is the practice to assign the necessary power. In this instance, the peak of the heavy grain movement eastward reached Winnipeg on October 24 and 25, and to take care of this wave, which had been increasing in volume daily, it was necessary to assign additional power to keep traffic moving currently east from Winnipeg. On this particular day there were in operation on the Kenora division, in freight service, 112 engines. In addition to the trains mentioned, the regular passenger and mixed trains were operated on time. These latter consist of four transcontinental passenger trains, two local passenger trains against the current of traffic between Winnipeg and Molson, and one mixed train on each of the three subdivisions. The westbound traffic on this day west from Fort William amounted to 174 loads and 1,125 empties, or 1,299 cars in all. A total of 169 trains were dispatched and on the road during the 24 hours under review, exclusive of passenger trains. To man our trains there were in the service at that time 327 engineers and firemen and 386 conductors and trainmen, exclusive of the passenger crews.

"The success of this movement was entirely due to the hearty and loyal co-operation of the employees."

RAILROAD ACCIDENT RECORDS (and similar data for city streets) might perhaps be relieved of some of their odium if occasionally they were compared with country-life conditions. In the State of Maine 13 deer hunters lost their lives in the woods during the season that closed on November 30. Four hunters were killed when mistaken for deer, three accidentally shot themselves, and one was accidentally killed by a companion. Two were drowned and three died from exhaustion and exposure. These accidents and incidents were accompaniments of the killing of 2,200 deer.

Accident Investigations— July, August and September

THE Interstate Commerce Commission has issued its ninth quarterly summary of accident investigations made by the Bureau of Safety, covering the reports completed in the three months ending with September, 1921. This pamphlet, 32 pages, covers 17 accidents—seven collisions and 10 derailments—as follows:

Derailment	..Pennsylvania	.....Huston Run, Pa.	.....July 13
Collision	..Denver & Rio Grande	.....Grizzly, Colo.	.....July 19
Derailment	..Delaware, Lackawanna & W.	.....Glenburn, Pa.	.....July 22
Derailment	..New York, New Haven & H.	.....Chatham, Mass.	.....July 27
Collision	..Central of New Jersey	.....Chatsworth, N. J.	.....July 27
Collision	..Chic., Rock Island & Pacific	.....Clear Lake Jet., Ia.	.....July 29
Collision	..{Minneapolis & St. Louis.	.....Perry, Iowa	.....July 30
	..{Chicago, Mil. & St. Paul.		
Derailment	..New Orleans, Tex. & Mex.	.....Gordon, La.	.....Aug. 5
Derailment	..New Orleans, Tex. & Mex.	.....Clear Creek, La.	.....Aug. 8
Collision	..{Toledo, St. L. & W.	.....Lerna, Ill.	.....Aug. 13
	..{Illinois Central		
Derailment	..Baltimore & Ohio C. T.	.....Blue Island, Ill.	.....Aug. 20
Collision	..Wash'n., Balt. & Annapolis	.....Revell, Md.	.....Aug. 23
Derailment	..Denver & Rio Grande W.	.....Gale, Colo.	.....Aug. 24
Derailment	..Delaware, Lackawanna & W.	.....Apalachin, N. Y.	.....Sept. 3
Derailment	..Atlanta, Birm'hm. & Atlantic	.....Cascade Cross'g., Ga.	.....Sept. 3
Derailment	..Chicago and North Western	.....Belle Plaine, Ia.	.....Sept. 16
Collision	..Pennsylvania	.....Gould, Ohio	.....Sept. 25

Following are abstracts of these reports:

On the Pennsylvania Railroad, near Huston Run, Pa. (Monongahela division) on July 13, a southbound freight was derailed by the emergency application of the air brakes when the train broke in two between the tender and the first car; and one car fouled the northbound track. It was run into by northbound passenger train No. 7731, and the passenger locomotive was derailed and overturned. The engineman of this train was killed and one other employee was injured. The inspector gave the cause as the pulling out of the coupler of the leading car because of the coupler key having worked out. The cotter key was missing. The conclusion says that if the cars had been inspected at Shire Oaks it is probable that if the cotter key had been missing at that time its absence would have been discovered and the accident probably prevented.

The trains in collision on the Denver & Rio Grande at Grizzly, Colo., on July 19, about 9:07 a. m., were westbound freight No. 65 and eastbound passenger No. 2. The trains met on a curve of eight degrees. They were moving at low speed, but the fireman of the freight was killed. Six other employees and two passengers were injured. The collision occurred between the switches of the passing track. The freight locomotive had been cut off from its train to be run forward and backed into the siding. It had right of track to do this as, by train-order No. 10, the passenger train would be two hours 40 minutes late; but train-order No. 15, which had not been delivered to the freight, allowed the passenger to run 20 minutes earlier; and the passenger had right of track to the east switch until 9:17 a. m. The inspector finds that the dispatcher who omitted to send a copy of order No. 15 to the freight had ample time to do so; and if this had been done the freight would have had no right to the main track west of the east switch without flag protection. The dispatcher was employed as agent and operator in 1905, promoted to dispatcher in 1907 and to chief dispatcher in 1917.

The train derailed on the Delaware, Lackawanna & Western at Glenburn, Pa., on July 22, was westbound passenger No. 3, consisting of locomotive No. 1120 and nine cars, all of steel. The train was moving at about 50 miles an hour on a descending grade when it was thrown off the track by a nut, $\frac{3}{4}$ in. square, which had been placed on the track by some unknown person. The engineman and fireman were killed, and 79 passengers, three mail clerks and two employees were injured. The leading wheels of the engine truck were first derailed and they ran on the ties more than 2,600 ft. to a trailing switch, where the rest of the train ran off; and the locomotive was overturned. It appears that neither the engineman nor the fireman, nor any person on the train, knew

that the leading wheels were off the rails until the train had traversed the half-mile from the obstruction to the switch. Throughout the half-mile it was noted that the marks on the ties were not sufficiently severe to necessitate any repairs to the track. The wheels on the right hand side, in some cases, skipped over a tie without touching it.

On the New York, New Haven & Hartford, near Chatham, Mass., on the seven-mile branch from Harwich to Chatham, on July 27, southbound passenger train No. 5553, consisting of three cars and a locomotive, the locomotive moving backwards, was derailed on a curve of five degrees while moving at about 25 miles an hour; and the engine was overturned. The engineman and fireman were killed. The engine was being run backwards because of some difficulty in using the turn table; but it had been run backwards many times and there was no evidence that the derailment was due to any fault in the tender or the track. The report gave the cause of the accident as not definitely ascertained.

The trains in collision on the Central of New Jersey near Chatsworth, N. J., on July 27, were eastbound passenger No. 324 and westbound freight extra No. 182, the latter consisting of 10 cars and a caboose drawn by engine 182. The freight, running at high speed, passed the train order signal at Chatsworth, set against it, and collided with the passenger train 200 ft. west of the station. The passenger train had stopped, the engineman having seen the freight; but there had not been time to move it backward. The passenger train was driven backward about 65 ft. by the impact. The engine remained upright, although all its wheels were off the rails. The freight engine was overturned. Eleven passengers and seven employees were injured.

The trains had had orders to meet at a station west of Chatsworth, but this order was superseded by another, to meet at Chatsworth. This second order had not been delivered to the freight, but was placed at Chatsworth for it. The signal was properly displayed, and the train approached on a straight line of about three miles, in clear weather; but the signal was disregarded. The station agent saw that the freight was coming too fast and he gave a stop signal by hand (on the fireman's side) but no attention was paid to this signal. Engineman Wilson of the freight said that approaching Chatsworth Brakeman Lundell said the train order signal was clear, and Wilson said it was difficult to see, but this excuse appears to have had no foundation. The fireman of the freight was making his first trip over this division, and had not seen the signal at all.

The report attributes the collision to the failure of Engineman Wilson to observe the signal. Wilson admitted approaching the station at 40 miles an hour, or faster, although knowing that he was approaching a train order signal. The brakeman is censured for misinforming the engineman, but it is observed that his action was not responsible for the engineman's failure to keep his speed under control.

The trains in collision on the Chicago, Rock Island & Pacific near Clear Lake Junction, Iowa, on July 29, were eastbound second-class freight No. 912 and westbound third-class freight No. 83. The trains met within yard limits at about 12 to 20 miles an hour and the engineman, fireman and one brakeman of train No. 83 were killed. The inspector finds that the conductor and the engineman of train No. 83 had departed from Clear Lake Junction without examining the train register; and they were encroaching on the right of an opposing superior train. It appears that an engine without train, No. 1523, had been run ahead of No. 912 as an extra, as far as Clear Lake Junction; and then from Clear Lake Junction eastward it was run as No. 912. Thus, the men of train 83 had met No. 912, but after passing Clear Lake Junction had to meet another train of the same number.

The inspector also finds that if any one of the men on the engine of No. 83 had been maintaining a proper lookout, on

the inside of the curve, the approach of No. 912 would have been observed in time to admit of stopping the westbound train. The eastbound engineman was deceived, for a short time, by assuming that the westbound train was on the track of the Chicago Great Western, which lies alongside the Rock Island track. Other irregularities contributed to the collision; and one flagman had made only two trips over this part of the road.

The trains in collision at Perry, Iowa, on July 30, about 6:10 a. m., were eastbound passenger No. 4 of the Minneapolis & St. Louis, and westbound freight extra 8653 of the Chicago, Milwaukee & St. Paul, the passenger running into the side of the freight at the crossing of the two roads. The 22nd, 23rd and 24th cars of the freight were knocked off the track and damaged, and the passenger locomotive fell down a bank. An employee, off duty, was killed by being struck by one of the freight cars. There is no interlocking at the crossing and trains are required to stop at a stop board. The passenger train approached on a straight line, but the engineman, although he had reduced his speed at a point one mile back of the crossing, did not keep a good lookout, and reached the crossing sooner than he expected to. He said that he struck the freight at about 10 miles an hour, but the inspector thinks he was running faster. The engineman was acquainted with the road and there were landmarks, including a bridge about one-fourth mile from the crossing, which should have enabled him to determine his location with sufficient accuracy.

The inspector finds that about 30 trains a day pass over this crossing on the St. Paul road and 14 trains a day on the M. & St. L.; and therefore recommends the installation of interlocking signals.

The train derailed on the New Orleans, Texas & Mexico near Gordon, La., on August 5, was a westbound freight, extra 113—locomotive and 46 cars. Moving at about 40 miles an hour, or faster, where the regulations required a much lower speed, the four rear cars and the caboose were derailed, and the conductor and one brakeman were killed. The inspector believes the derailment was due to excessive speed on uneven track, combined with excessive side-bearing clearance on the forward end of a tank car. Inspection of this car, the first to run off, showed that this clearance on one end of this car was $\frac{7}{8}$ in., while it should not have been over $\frac{3}{8}$ in. This was a car of 100,000 lb. capacity.

The train derailed on the New Orleans, Texas & Mexico, near Clear Creek, La., on August 8, was eastbound freight extra No. 88, consisting of a locomotive and 42 cars. Two trespassers were killed and one employee and four trespassers were injured. The inspector finds the cause of the collision to have been excessive speed on irregular track, together with excessive side bearing clearance on the front truck of a tank car. The wreckage of 17 cars was piled up in a distance of 300 ft. and the leading portion of the train ran about 1,000 ft. after derailment, indicating that the speed had been high. The rule limits the speed at this point to 25 miles an hour.

Trains in collision at Lerna, Ill., on August 13, were eastbound freight No. 46, second section, of the Toledo, St. Louis & Western, and northbound passenger No. 222 of the Illinois Central, the freight running into the side of the passenger at the crossing of the two roads; the crossing is at right angles. Both trains were moving very slowly. This collision occurred at about 9:50 p. m., and the passenger train had made a stop for the crossing, there being no interlocking signals. A conductor, off duty, was killed, and four passengers and two mail clerks were injured. The engineman of the freight had not attempted to stop, although he had been a runner since 1913. The inspector found that of the air brakes on the freight train only 77 per cent were operative.

The train derailed on the Baltimore & Ohio Chicago Terminal near Blue Island, Ill., on August 20, was a southbound extra freight. The locomotive was overturned and the

engineman was killed. Moving at 20 miles an hour, or faster, the tender rocked, on uneven track, so as to jump the track and cause the derailment. The engine was running tender first.

The trains in collision on the Baltimore & Annapolis Electric Railroad at Revell, Md., on August 23, were northbound passenger No. 332 and a southbound work train, the latter consisting of a motor car with one platform car, the motor pushing the flat. The conductor and the motorman of the work train were killed. These men had encroached on the time of the passenger train several minutes. How they came to do so is not known, but the brakeman, who was riding on the rear of the motor, thought that they were depending on the rights of a following superior train, No. 329. They thought that 332 would have to wait at Revell for 329; but an order had been issued fixing the meeting point at a station north of Revell.

The train derailed on the Denver & Rio Grande Western at Gale, Colo., on August 24, about 3:20 a. m., was westbound passenger No. 1, first section, consisting of a locomotive and 11 cars, all of steel construction. Moving at about 20 miles an hour, the train broke through a trestle bridge, the foundations of which were weakened by a sudden flood. One passenger and Engineman Armstrong were killed and 63 passengers and six employees were injured. The foundations of the bridge, 16 ft. apart, were 20 ft. long and 3 ft. wide with a depth of 5 ft. These were surmounted by bents of yellow pine, 12 in. x 12 in., properly braced and tied. The water course usually is dry, but on the night of the derailment there had been a heavy storm several miles upstream, and water had been flowing under the bridge to a depth of from 6 feet to 9 feet. This train had orders calling attention to 13 places where speed was to be reduced; but none of them applied at this particular point, no danger having been apprehended.

The train derailed on the Delaware, Lackawanna & Western near Apalachin, N. Y., on September 3, was westbound passenger No. 3, second section, consisting of a locomotive and nine cars, seven of the cars being all-steel. Moving at about 45 miles an hour, or faster, the train was derailed at or near the end of a curve of less than four degrees; and the locomotive and first car were overturned. One passenger was killed and 69 passengers and eight employees were injured. The inspector finds that the track, which was being raised and ballasted, was not strong enough to carry a train of this weight at this speed. "The indications are that the ballast did not hold, and that the track slid underneath the train." The trackmen had stopped work at this particular point and there was a heavy shower shortly before the derailment which may have tended to loosen some of the ties.

The derailment on the Atlanta, Birmingham & Atlantic at Cascade Crossing, Ga., on September 7, was caused by an explosion, the explosive having been placed under the track maliciously. The report on this case was noticed in the *Railway Age* of October 3, page 665.

The train derailed on the Chicago & North Western near Belle Plaine, Iowa, on September 16, about 3 a. m., was westbound passenger No. 7, consisting of a locomotive and eight cars. Moving at about 35 miles an hour, the train was derailed at a washout and the locomotive was overturned. The engineman and fireman were killed and one passenger, three employees and three trespassers were injured, one of the trespassers fatally. The report of the inspector says that the washout was due to an unusually heavy rainfall and that it was at a point where no previous difficulty had been experienced.

The collision on the Pennsylvania Railroad at Gould, Ohio, September 25, was caused by a false clear semi-automatic block signal, which was out of order by reason of grounds on controlling electric wires. This case was reported in the *Railway Age* of November 26, page 1052.

Meeting of Railroad Division of A. S. M. E.

Papers on Elimination of Waste in Design of Motive Power and in Operation of Locomotives and Cars

THE ELIMINATION of waste in industry was the general topic discussed at the annual meeting of the American Society of Mechanical Engineers held in New York this week. In conformity with the central theme, the Railroad Division of the society, at its meeting on December 6, presented three papers on avoidable waste in locomotives and cars. The first of these papers, by James Partington, on

Avoidable Waste in Locomotives as Affected by Design, was published in the *Railway Age* of November 5, page 899. The first part of the paper by William Elmer on Avoidable Waste in the Operation of Locomotives and Cars was abstracted in the issue of December 3, page 1081. The concluding section of Mr. Elmer's paper and the paper by W. C. Sanders appear below.

Avoidable Waste in Car Operation—The Container Car

By Walter C. Sanders

The container car was an outcome of the railroad congestion during the war and was first put in operation last year by A. H. Smith, president of the New York Central Lines, to reduce the transportation losses due to congestion which tied up industry. It is hoped that mail, express and freight robberies, breakage, checking and rehandling, delays to ship-

pers and station overseers, as well as switchmen to shunt cars to fixed locations where loading and unloading are possible.

The container system provides that the portable container shall be loaded and locked at the shipper's own store door, conveyed by motor truck to the railroad yard, and lifted by crane aboard the container car, where steel bulkheads and sides form absolute protection against opening the container in transit. At the destination the locked container is unloaded by a crane and carried by motor truck directly to the warehouse or consignee's door, to be unloaded at his convenience. This simple system of handling goods will make it possible to greatly reduce the force of employees now necessary.

Another advantage of the container-car system expected

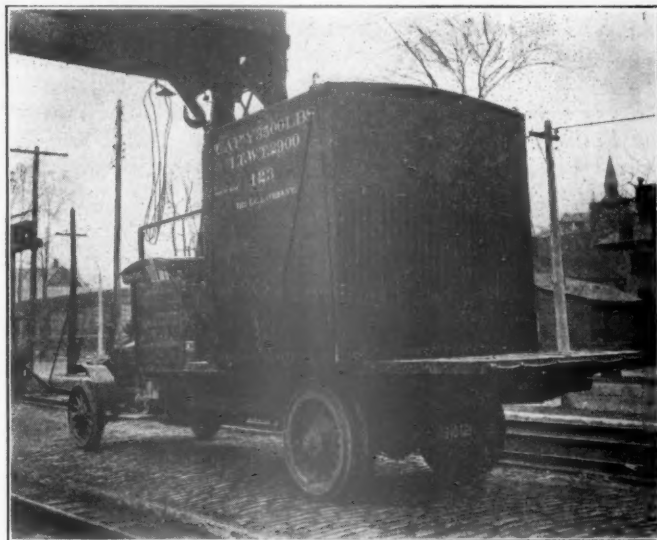


A Carload of Mail Containers Ready for Delivery to the Post Office

pers, and many other railroad evils may also be materially reduced by the container-car system.

Loss of and damage to freight has grown in recent years into one of the heaviest leaks in the transportation industry and strenuous campaigns which included maintenance of extensive police and supervisory forces, together with educational campaigns among shippers and railroad employees to secure stronger packing, careful handling and suppression of theft, have failed to stop this economic waste.

The proportions of this transportation problem may be judged from the fact that in the year 1914 American railroads paid out \$33,000,000 in claims for loss of and damage to freight, and for the year 1920 this mounted to a total of \$125,000,000, the incidental injury to business affected being considerably greater. Under the ordinary system of handling less-than-carload lots or shipments the goods are checked and handled item by item from shipper to truck or dray, from truck to depot platform or warehouse, and from the platform to the car. They are subject to handling and checking at each stage of the journey, and when finally they reach their destination this handling and checking is all done over again. It is therefore necessary to maintain armies of employees to act as freight handlers, clerks, check-



Freight Type Container Loaded on a Motor Truck. The Larger Containers Which Originally Formed Part of the Equipment Are No Longer Used, the Size Shown Being Standard

to prove most valuable is the greatly increased use of container rolling stock in moving service, which is particularly important when traffic expands to its peak and when the prime need is to shorten layovers of cars in yards and stations for loading and unloading, and to limit their idleness and obstruction through misuse for storage purposes. In busy times the need is to keep every wheel turning as continuously as possible to secure maximum transportation. With ample supplies of the removable containers, which in

their several classes are of uniform size and interchangeable, one carload of containers may be removed and sent with their loads to consignees, and another set immediately hoisted into place and the car be ready to proceed within a matter of minutes in most instances. The locked containers may remain on station platforms or at the stores of shippers for loading or unloading at convenience without tying up costly rolling stock at points where track capacity is limited and congestion quickly obstructs the flow of traffic unless the cars are kept moving. With this rapid handling of the containers on and off the car the mileage per year made by the ordinary piece of rolling stock may be doubled, and it is predicted that the tremendous expense of maintaining box cars and other rolling stock equal to all emergencies will be materially cut down.

The container car may make costly packing and crating unnecessary because goods packed in flimsy pastboard boxes or even bound with heavy paper are protected against breakage, theft, and water or weather damage.

There are at present in service on the New York Central Lines three container cars, one of the mail or express type, and two that are being used for valuable freight, such as silks and woollens. Three new mail cars of improved design which are now being constructed will be equipped with an improved type of all-steel container. A new freight-type container car is being designed, and refrigerator and tank container cars are contemplated.

General Description of the Container Car

The container car is nothing more than a long car with a steel side or fence, similar to a low-side gondola, loaded with large steel safes or containers, made as light as possible, in which commodities of all kinds travel from consignor to consignee, inviolate against thieves, fire, weather and breakage. The safes or containers are lifted on and off the car by cranes or hoisting devices, permitting the "parent" rolling stock to continue in immediate transportation circulation.

[Mr. Sanders' paper included a detailed description of the express container cars as illustrated and described in the *Railway Age* for February 4, 1921, page 315, and the freight container cars described and illustrated in the issue of April 8, page 905.—Editor.]

Containers and Container Cars

Now Under Construction

The three new mail-type container cars now being built will carry eight containers of a new, improved design, the outside measurements being, length 7 ft. 2½ in., width 9 ft. 3½ in., clear height 8 ft. 2 in., with 5 ft. 9 in. by 3 ft. 6 in. door on the length side of the container. The cubic capacity will be 438 cu. ft., light weight 3,000 lb. and capacity 7,000 lb.

Tests conducted in the last few months on the New York Central Lines have demonstrated that the express type of container car can be emptied of the nine containers by an ordinary crane in 21 min. and reloaded with other containers and the car put back in circulation in about the same time. This test was made with an ordinary moving track crane, since no special cranes or handling devices have as yet been constructed for use in handling the containers. With the special handling devices contemplated it will be possible to unload the containers with greater speed directly to waiting motor trucks, platforms, or on the ground.

During May, 1921, at the request of the Postmaster General, a mail test was run from New York City to Chicago, Ill., and return with the express type of container car. Upon arrival at Chicago the nine containers, containing 37,000 lb. of mail, were unloaded onto waiting Post Office motor trucks in 21 min., which is one-fifth of the time used in unloading an ordinary mail storage car. At Chicago connections were

made with western mail trains that have never been made before. Upon the arrival of the car at New York on the return trip the containers were removed from the car in 18 min.

It is believed that the use of containers in mail service (1) will prevent the loss in transit of valuable registered mail, parcels post and other mail; (2) will mean a saving to the government in handling mail, both in trucking and checking as well as a material saving to the railroads in the use of equipment; (3) will make possible a quick transfer at important gateway points and the maintaining of close railway connections otherwise impossible; and (4) will afford an increased weight and capacity as compared with the average load now handled in mail storage or baggage cars, the average weight of mail now carried in mail storage cars being approximately 30,000 lb.; 37,000 lb. of mail were carried on the run to Chicago.

Summary

A summary of prime advantages of the container car system is as follows:

- (a) It will furnish a means of expediting delivery of less-than-carload lots of commodities by eliminating the time and expense of rehandling, checking and trucking.
- (b) It will eliminate costly crating and packing.
- (c) The immediate unloading and loading of containers at terminal points eliminates the item of demurrage, at the same time promptly releasing rolling stock, clearing the yards of cars and reducing congestion.
- (d) It will eliminate the piecemeal loading of cars at railway sidings in exposure to all kinds of weather.
- (e) It will tend to keep the car moving at all times, making possible double the mileage as made now by an ordinary piece of rolling stock.
- (f) Containers are fire- and weather-proof, and also burglar-proof in that they cannot be opened while on the car or while being transferred by handling device to and from the car.

The increased service capacity of each unit by the development of the container-car system is thought to hold far-reaching economic possibilities in railroad operations of the future, as well as in the co-ordinated use of the motor truck and the electric railway.

Discussion

R. H. Newcomb (Boston & Maine), told of experiments with container cars manufactured by the River and Rail Transportation Company on the Boston and Maine. This design differs from the container car described by Mr. Sanders in that the containers can be transferred from the car to motor trucks without the use of cranes or other lifting devices. The container method of transportation seems particularly well adapted for use on the railroads in New England and it was thought that by this system less than carload freight could be handled with one-third the number of cars now used. Replying to questions, Mr. Newcomb stated that no trouble was encountered due to containers freezing to the car underframe in winter and no difficulty was experienced in meeting the requirements of the Safety Appliance Act.

A. E. Ostrander (American Car & Foundry Company), brought out the fact that high-grade commodities, such as furniture, were frequently shipped in the bodies of vans which were removed from the running gear and loaded onto freight cars. The container car affords a much better method of handling such traffic which should be advantageous to the railroads and also to the shippers. The container method of transportation should open up to the railroads a profitable traffic field in the handling of raw and finished silks which are now shipped principally by auto truck.

Representatives of the railway mail service emphasized the

value of the container car in expediting the delivery of mail and in handling parcel post matter.

F. S. Gallagher (New York Central) stated that the appli-

cation of the container system to the transportation of milk was now being considered. By using suitable insulation around the tanks, no icing in transit would be required.

Avoidable Waste in the Operation of Cars*

By William Elmer

The avoidable waste in the operation of cars may be considered under three heads: *a*, The utilization of cars in the hands of agents, shippers and consignees; *b*, The handling and dispatching of cars in yards and on the road; *c*, The inspection and repair of cars by the maintenance of equipment department.

Utilization of Cars in the Hands of

Agents, Shippers and Consignees

So far as the railroads are concerned, one great means of improving utilization that suggests itself is the increased use of cars in the hands of agents and shippers, which necessarily involves the promptness with which they are loaded and unloaded and the extent to which they are loaded, i. e., that the maximum loading be secured for the car in the minimum time, etc.

Maximum car loading is a matter of dire necessity during periods of car shortage. It is also very essential to the economic conduct of transportation. During recent months the necessity for conserving cars has been decreased by the small volume of tonnage handled by the railroads. With the slump in traffic there is a tendency on the part of the shippers and railroad men alike to let down in their effort to secure maximum loading. This "line of least resistance" method is resulting in considerable less than capacity loading.

It is a fact, not generally recognized, that car loading affects the cost of railroad operation very seriously, not only because the paying load may be a small percentage of the gross train load, but also because lightly loaded cars require more tractive effort per ton than heavily loaded cars, e. g., the average weight of a car is from 15 to 20 tons while the average weight of all commodities is averaging approximately 27 tons. The load of the car itself must be hauled with every movement of the contents and requires as much tractive effort on the part of the locomotive per ton to move this weight as it does for the contents, therefore the importance of keeping the percentage of lading to total weight as high as possible is self-evident. This question has assumed a very different aspect to the shipper since the passage of the Transportation Act, which stipulates that the rates must be sufficient to earn a fixed return on the value of the properties. Any waste due to the light loading of cars adds to the operating cost and thereby to the rates necessary to earn the specified return. The shipper therefore has a new interest in effecting economics of transportation and can contribute to that end most effectively by co-operating in the heavier loading of cars.

General practice permits the loading of cars 10 per cent in excess of the marked capacity. There are great possibilities in the utilization of this margin for with many classes of loading great advantage may be taken of it to gain one car in every ten and to increase the average carload correspondingly.

There are many commodities moving which will permit of making trade units to correspond to the capacity of the car; this has been done with cement, and other like commodities. If this were done with flour and all similar commodities great assistance might be rendered to the railroads.

The agent through close association with shippers is in the best position to encourage maximum loading. It is often decidedly hard to convince shippers that they are not loading their cars to cubical capacity. This is particularly true of the coal operators. The best means of producing convincing evidence of the empty space in the car is to show the shipper a photograph of the car which will speak for itself, and we have found a kodak to be a most helpful instrument in increasing the tons per car. The cars may be intercepted and photographed at scales or in classification yards.

The prompt release of cars under load is a large factor in the efficiency of the car. Most shippers and consignees are reasonable in this respect and will give us their best efforts if the matter is handled with them in a diplomatic way. After urging the shippers and consignees, the railroad then has a very important part to play by the prompt movement of cars, whether loaded or empty; it being purely psychological that, after urging the shipper or consignee, failing on our own part would necessarily breed antagonism.

The Handling and Dispatchment of

Cars in Yards and on the Road

After cars have been loaded and waybills furnished by the agent to transport freight from point of origin to destination, it becomes the duty of the trainmaster to arrange for movement and delivery with the least possible delay consistent with economical operation. This necessarily involves good organization and effective supervision to accomplish proper movement through yards and over the road. Trains arriving in the receiving yard are subjected to inspection and minor repairs to insure safe movement over the road between terminals, sending to the repair yard any bad-order cars that must be "shopped" for this purpose. After inspection and repairs have been completed, the train is prepared for switching from receiving yard to classification yard, which process requires car markers to chalk-mark cars for their respective classification tracks, according to destination and routing, also furnishing corresponding switching lists for the conductor in charge of switching crew, and switchmen who operate switches leading into the classification yard. Yard locomotives and a force of trainmen are required to switch trains into the classification yard at proper speed for accurate weighing at points where cars pass over a track scale; also requiring brakemen to ride cars into the classification yard and control them by use of hand brakes to bring them to a stop at the proper point and to avoid damage by impact with preceding cars standing on the track.

The train from the receiving yard has now been distributed on various tracks in the classification yard, usually from ten to thirty tracks, depending on the size and importance of the yard operation. The original train having thus lost its identity, following trains, classified in like manner to the same tracks, are required to assemble cars that will comprise new trains to be dispatched when the required tonnage is accumulated. A variety of conditions arise at this stage of the operation that seriously influence the time consumed by cars en route to their destination, which may necessarily be repeated from one to many times between the originating point and destination of cars, depending on the distance and the territory over which they are moving. The time required to assemble sufficient tonnage for a train in

*An abstract of the section of Mr. Elmer's paper dealing with locomotives was published in the issue of December 3, page 1081.

the classification yard is very largely dependent on the steady or intermittent arrival of trains in the receiving yard; also on the hauling capacity of road locomotives used on trains dispatched in the same direction, which may be 35 or 50 cars from one yard and 100 to 115 cars from another yard for the same class of locomotive, depending on the ruling grade of the division over which trains are being hauled.

In this connection another primary cause of delay in assembling trains in the classification yard is to be found in the usual number of classifications imposed upon certain yards for the convenience of connecting divisions to meet their requirements for various reasons, but primarily due to inadequate track and switching facilities. So-called "prior classifications" are also a source of yard delay at the point where they are assembled, but the time thus consumed is presumably offset by saving in time at the next yard or terminal point where such trains are kept intact and delivered to the division in advance thereof without reclassifying, which means an actual saving in the aggregate time consumed from shipping point to destination, also in operating expenses. Therefore a considerable portion of yard delay is beyond control, owing to prevailing conditions that cannot be eliminated. However, there is ample opportunity for minimizing yard and road delays to train movement by employing the best operating methods, maintaining sound organization and efficient supervision.

Time consumed assembling tonnage for heavy trains to be hauled by large types of locomotives over comparatively level grades may be viewed by some as a contributory cause of "avoidable waste in cars," but it should be recognized that doing so reduces the number of engine and train crews and locomotives required to haul a large volume of freight, which means economical operation.

The Inspection and Repair of Cars by the Maintenance of Equipment Department

When trains are hauled over the road, certain defects develop and by the time they reach the terminal of a run, a certain portion of the cars, say 3 to 5 per cent, must go to the shop for repairs.

In order to keep a check on cars undergoing repairs, a report is prepared and sent to the different operating officials. The report indicates the time the car is shopped, the time it is moved to the shop, the time repairs are completed and the time car is moved out of shop. By checking over this report each morning the master mechanic, superintendent or general officers can determine in a few seconds if there are any cars that are being held an unreasonable length of time.

It is the aim of the operating officials to not only see that all cars are repaired, but to have the cars repaired promptly and returned to service in the most expeditious manner.

Conclusions

The great secret of the entire operation, therefore, is co-operation and teamwork, and these can be checked by suitable reports.

The statistics which reach the superintendent's desk giving hourly, daily, weekly and monthly information are many and varied, and originate from numerous sources, but the reports scanned by the author with most interest each day are those which tell where each of the heavy road freight and passenger engines were the day before and what they were doing. There is a maxim, "Take care of the shillings and the pounds will take care of themselves." It seems to apply particularly to the railroads. Take care of the engines and the dividends will take care of themselves. Of course this could not be literally true, but there is so much involved in this "taking care of the engines," embracing as it does the time and inferentially the money spent in locomotive repairs, the quality of back-shop and enginehouse work performed,

the proper tonnage rating, and suitable loading of engines in order to obtain the most economical road speed, the reduction of delays getting into and out of yards, the inspection and repair of car equipment, the efficiency of water stations, coal, sand and ash-handling plants, the organization and operation of wreck forces, the handling of local freight and work trains, in fact, almost each and every one of the thousand and one matters that go to make up a successful operation of a division.

If any one of the features named above is not functioning properly, as well as others too numerous to mention, the effect will be seen in the slowing down of the road speed or a lowering of the average mileage per serviceable locomotive or a falling off in the loading efficiency. All these must be at their highest possible levels of practical performance, and when they are, a glance of the eye at the daily barometer ought to tell it, and when they are not, a few minutes' inspection of the data ought to tell why and point the remedy. The supervisors must have tracks fit for speed and service; the signal engineer must have communicating systems and signal apparatus in good working order; the road foremen must have engines properly rated and sufficient crews and supervision; the train master must have his yard and road forces properly instructed and disciplined; the division operator must have his train dispatchers and signalmen alert and intelligent; and the master mechanic must produce the power in ample quantity and fit for service.

If the division superintendent can be assured that everything is being done that can be done to have every available engine in service that can be put in service, and every engine dispatched is being loaded to the maximum number of cars it can economically haul, then he is assured of an economical performance and an avoidance of waste in the operation of locomotives and cars.

Discussion

In presenting his paper, Mr. Elmer amplified some of the more important sections and presented a series of charts which he used to keep a record of the performance of individual locomotives and of the motive power on the division taken as a whole. He referred to the omission of figures regarding the cost of fuel from the tabulation of expenses from which the most economical train loading was determined and explained that this was done because of the difficulty of determining accurately the variation in the unit costs of fuel with the relatively small change in the tonnage which was included in the table.

W. L. Bean (New York, New Haven & Hartford) commended Mr. Elmer's paper as a splendid exposition of the methods to be used for overcoming poor utilization of equipment. Referring to the subject of fuel consumption he stated that the condition of engines has a great effect on the amount of coal burned. Locomotives may perform satisfactorily to the operating officers to the extent of keeping off the delay sheet and yet burn 25 per cent more coal than necessary. It has been demonstrated that a great improvement could often be made by properly adjusting the valve motion.

Mr. Bean called attention to the variations in operating results brought about by changes in the amount of traffic. During periods of light traffic the time over the road decreases and fuel consumption also goes down. He expressed the opinion that more harm is done by overloading locomotives than by underloading them.

In discussing equated tonnage rating Mr. Bean stated that on some roads a constant adjustment factor is used on all divisions irrespective of local conditions. The adjustment factor applies only to the frictional resistance and therefore should vary with the grade, being high on level divisions and low on divisions with steep grades. The same applies also to the temperature adjustment factor used for regulating tonnage rating in cold weather.

Discussion of Paper by James Partington

The discussion of the paper on Avoidable Waste in Locomotives as Affected by Their Design, by James Partington, which was published in the *Railway Age* of November 5, 1921, page 899, brought out some striking suggestions for modifications in the design and types of motive power as the following extracts from the discussion will show:

Among the newly developed locomotive attachments that make for increased efficiency and economy the thermic syphon may be mentioned, by reason of its already ascertained influence over the avoidable waste in locomotive design and operation. On all tests made thus far the thermic syphon has never failed to reduce the amount of fuel consumed per drawbar horsepower. In some cases the installation of these syphons has resulted in a 25 per cent fuel saving. An average saving of 15 to 19 per cent, according to class, is now well established.

The second efficiency requirement proposed by Mr. Partington is that a drawbar horsepower be produced for the minimum amount of weight of locomotive and tender.

Locomotive 50000 was built back in 1910; and Mr. Partington therefore refers to a number of newly developed attachments which make for increased efficiency and economy. Along with these the thermic syphon, also of fairly recent development, should be considered. Indeed, consideration of thermic syphons, as if applied to locomotive 50000, will at once demonstrate the fundamental character of the improvement which the thermic syphon has accomplished in locomotive design. I will assume that the boiler horsepower of this locomotive is 2250 as stated in the paper. I have also assumed that all of Mr. Partington's figures relating to boiler horsepower are based upon the formulas devised by F. J. Cole of the American Locomotive Company and have used this method in estimating the capacity increasing ability of the thermic syphon; although, over and beyond the increase brought about by the addition of radiant heat absorbing surface in the firebox, consideration must be given the very rapid circulation which the syphons impart to all the water in the boiler, and the effect which this circulation has in further increasing the capacity of the boiler.

The thermic syphon is an inverted triangular water leg that is positioned vertically above the fire in the firebox, and which by thermal action draws water from the throat and barrel of the boiler, and discharges it through and above the crown sheet of the firebox. Thereby the firebox heating surface is much increased and a vigorous fore-and-aft circulation of boiler water is set up. Both factors contribute to a marked increase of capacity, as well as economy. Incidentally the syphons support the brick arch.

If two syphons were applied to locomotive 50000 they would add approximately 62 sq. ft. to the radiant heat absorbing surface of the firebox. The effect of this installation would be to add 164 boiler horsepower to the capacity of the locomotive, although I again desire to emphasize the point that this is, at best, a theoretical approximation which in actual practice is far exceeded due to the improved circulation effected throughout the entire boiler.

Allowing for the net additional weight of the syphons, the result of such installation in locomotive 50000 would be to reduce the weight of this locomotive to 113 lb. per boiler horsepower as compared with 119.6 pounds without syphons.

Further in the case of locomotive 50000, the application of thermic syphons as described would increase the boiler horsepower to 100 per cent of the cylinder horsepower. This increase in boiler capacity is alone sufficient to insure a substantial improvement in fuel economy, but assuming that a 92 per cent boiler, as originally provided is ample, what further contribution can the syphons make toward eliminating the avoidable weight in the design of this locomotive?

The original weight of this locomotive was 269,000 lb. If 2,350 boiler horsepower is sufficient and the application of syphons enables us to reduce the locomotive weight to 113 lb. per boiler horsepower, then it should be possible to build a syphon equipped locomotive of this capacity weighing approximately 254,000 lb., which is 15,000 lb. less, or to increase the cylinder horsepower of locomotive 50000 from 2,427 to approximately 2,600 horsepower by means of thermic syphons, without increasing the weight per axle.

Let us see what thermic syphons have actually contributed toward the elimination of avoidable waste in recent locomotive construction. For an example, consider the Mountain type locomotives which were constructed by the American Locomotive Company for the Chicago, Rock Island and Pacific last year. These locomotives are each equipped with three syphons and have a calculated boiler horsepower of 2,855. Without syphons the capacity of these boilers would be reduced to 2,550 horsepower. As these locomotives weigh 369,000 lb., their weight with syphons is 129.3 lb. per boiler horsepower, while without syphons, their weight would be increased to 144.7 lb. per boiler horsepower. The cylinder horsepower of these locomotives is 2,824 and to have provided a 100 per cent boiler without syphons on the basis of 144.7 lb. per boiler horsepower, would have increased the total weight of the locomotive to approximately 408,000 lb.

From a statement issued by the Interstate Commerce Commission, it is noted that the cost of these locomotives was approximately \$70,000, or at the rate of 19 cents per pound. At this rate it is apparent that if the railroad had purchased a Mountain type locomotive having a 100 per cent boiler without syphons, the first cost due to increased weight would not only have been \$7,410 greater, but the design of this locomotive would have included 39,000 lb. of added weight. Clearly, this is an instance of a most practical avoidance of waste in locomotive design. Moreover, it is obvious that by employing syphons in these locomotives, the railroads also eliminated avoidable waste in first cost, besides securing a more efficient locomotive that will continue to eliminate waste of fuel and upkeep every day that it is operated. The only conclusion that can be drawn from the foregoing is that locomotives built or operated without syphons must now be taken as representing avoidable wastes, from the standpoints of both fuel economy and unnecessary weight. An examination of the actual facts will convince anyone that syphon maintenance is a negligible factor; and further, that the syphon affords a potential safeguard against disastrous boiler explosions. Already 26 railroads have ordered and purchased thermic syphons. There are now more than 300 thermic syphons in actual use and it is a notable fact that to date, syphons have never caused an engine failure.

C. C. Trump (Stumpf Una-Flow Engine Co.): Perhaps many have wondered why the una-flow engine has not been as much used in locomotive as in stationary work where there are now nearly a million horsepower in service here and abroad. The difficulty has been to find room on the present locomotive for cylinders of a proper size on account of tunnel and bridge clearances. From the latest information from Prof. Stumpf, it appears that he has overcome this and other difficulties.

By using the energy in the exhaust steam with an ejector action, he is able to lower the back pressure in the una-flow cylinder by as much as 4 or 5 lb. per sq. inch, especially at heavier loads. He is thereby able to reduce both the length and diameter of his una-flow cylinder for a given draw-bar pull. This also applies to booster engines. He also obtains a better and steadier draft on his fire with less losses. He requires a smaller boiler, but a larger super-

heater because of the reduced temperature of the flue gases. With a three or four cylinder locomotive he expects still better vacuum and better drawbar horsepower for weight of locomotive and amount of fuel. Tests are now being conducted on locomotives of this type abroad.

With respect to higher pressure steam, it seems to me that the una-flow engine offers promise of remarkable economies. It is probably no use to go above 400 lb. gage with a simple engine. But data we have from Europe recently indicates that 700 to 800 lb. pressure with a compound una-flow engine and well designed condenser, economizer, etc., might well compete in fuel economy and even in simplicity with a Diesel locomotive engine. It would have great advantages over the Diesel in starting torque and traction and in being able to burn any kind of fuel in solid, liquid or powdered form.

W. F. Kiesel, Jr. (Pennsylvania System): The paper is of particular interest, due to its presentation of locomotives designed on basic values adopted by different designers, but compared on American Locomotive Company's formulae. Such formulae, being empirical, must be changed from time to time to keep pace with new theories introduced in locomotive design. Even then, they are useful only as a preliminary approximation of desired values.

Mr. Partington refers to 100 per cent maximum steam requirements of the cylinders. On referring to American Locomotive Company's Bulletin 1017, this, for superheater locomotives, is found to be based on a horsepower $H. P. = .0229PA$, in which P = boiler pressure and A = cylinder area. That formula is reasonably satisfactory, for locomotives having equal cut-off in full gear, but falls short of forming a basis on which to compare a locomotive with 90 per cent cut-off with one having 50 per cent maximum cut-off.

The test of the Decapod locomotive, Class IIS, showed that in full gear, at low speed, the steam per indicated horsepower was 38 per cent less than the steam rate for a locomotive with 90 per cent cut-off. Under average service conditions the saving in steam is at least 15 per cent.

If the empirical formulae are changed to meet cut-off effect, such as obtains in the Pennsylvania System IIS locomotive, some of the values in the second table would be affected. With a saving of steam of 15 per cent, the steam rate, calculated, pound-per-horsepower-hours, which is given as 20.8 would be 17.68 which compares favorably with test results. The best actual test for steam rate per indicated horsepower was 14.9 pounds.

The empirical formulae also fall short for comparison due to relative freedom of draft, especially in the smokebox which seriously affects size of nozzle and cylinder back pressure. Furthermore, the beneficial effect of large combustion chamber volume has not been clearly demonstrated. The freedom of the draft and large combustion chamber volume greatly affect the maximum boiler horsepower.

The locomotives listed in the first and second columns of table 1 are, respectively, the American Locomotive Company No. 50000, and the Pennsylvania System Class K4S. The test results for these locomotives are as follows:

	No. 50000	K4S
Low rate, one test, coal lb. per I. H. P.....	2.12	1.52
Low rate, one test, steam lb. per I. H.P.....	16.5	14.96
Maximum I. H.P.....	2,216	3,184
Weight of locomotive per maximum I. H.P.....	121.4	97

This shows that the K4S is actually far ahead of No. 50000 on every count, instead of being inferior as the comparison based on the antiquated empirical formulae would indicate.

Although these figures show the fallacy of empirical formulae in serving as a basis for comparative tabulation, they do not detract from the substance of the matter presented by Mr. Partington, which shows the method of procedure and the strides made in design and construction

during the past few years to make the locomotive a truly economical power plant.

C. J. Mellin (American Locomotive Company) commenting on the discussion by W. F. Kiesel, Jr., pointed out that the formulae used by Mr. Partington are intended for purposes of design and therefore all values have been taken on a very conservative basis. Furthermore, a careful study of locomotive proportions has resulted in an improved design since the formulae were originated and therefore in practice better results are always obtained than are indicated by the formula.

F. H. C. Coppus (Coppus Engineering and Equipment Company): In my opinion the steam locomotive can be developed to such a high degree of efficiency that its drawbar horsepower would be so cheap and its capacity increased to such an extent that the electrification of railroads for the sake of economy would be out of the question, at least on a large scale, for some time to come.

The logical order of locomotive development as far as combustion is concerned should be the following: 1. Mechanically induced draft in the front end. 2. Condensing the exhaust steam and carrying the condensate to the tender. 3. Pumping the hot water from the tender through a waste steam and waste gas heater into the boiler. 4. Under-grate forced draft in the ash pan.

Mechanically induced draft in the front end would eliminate the exhaust nozzle and reduce the back pressure to a maximum of four pounds. Exhaustive tests made on the Santa Fe showed that an average *added* indicator horsepower of 24 per cent could be obtained by reducing back pressure to four pounds. This means among other things a saving in fuel of 20 per cent.

The hot water from the tender pumped through a waste steam heater would enter the waste gas heater at 220 deg. F. This temperature can easily be raised to 300 deg. in the waste gas heater. Raising the temperature from an average of 60 deg. the year round as it now is to 300 deg. is an undisputed saving of 20 per cent.

Under-grate forced draft in the ash pan in conjunction with induced draft in the front end would create a balanced draft condition which would largely eliminate the loss of unburned coal in sparks and cinders through the stack—estimated to be between 5 and 20 per cent.—would stop the inrush of cold air every time the fire door is opened, enable the burning of cheaper grades of coal and, giving unlimited control, automatic action, and absolute flexibility, would increase the furnace efficiency. All of which will easily result in an average saving of 20 per cent.

From these savings should be deducted the steam used for the operation of the pump and blowers which will reduce them to a net overall saving in fuel of a little over 45 per cent.

It is difficult even to estimate the indirect savings which would result from drafting locomotives mechanically. The increase in the power of compound engines would be enormous. I have figures to show that the *added* indicated horsepower to the low pressure cylinder would be 53 per cent. Taking it altogether I look forward with confidence to the reduction of the operating expense of the locomotive to an equivalent of 50 per cent of the present coal consumption. The suggested improvements can be added to all locomotives now in use and at a cost that they will pay for themselves inside of a year.

Elmer A. Sperry discussed the application of the Diesel engine to locomotive service, stating that this is one of the principal problems confronting designers and builders of Diesel engines. The fuel efficiency obtained with the Diesel type of engine is so striking that, in Mr. Sperry's opinion, it is bound to come to the fore. He felt that there was an encouraging outlook for the application of the compound Diesel engine which has recently been developed.

Asked to Abrogate Foreign Ship Line Contracts

Eastern Roads Willing; Transcontinental Lines Reluctant as to Agreements with Japanese Lines

WASHINGTON, D. C.

REPRESENTATIVES of the railroads having traffic contracts with foreign steamship companies were called to a hearing before a committee of the United States Shipping Board on December 1, scolded for their alleged assistance to competitors of the ships operated by the government and asked to promise at once that they would abrogate the contracts on the ground that the board considers them a "menace" to the success of ships operating under the flag of the United States. The officers of the roads serving Atlantic and Gulf ports said they attached little importance to the contracts, that they did not discriminate against lines with which they had no contracts and expressed a willingness to abrogate them, although in some cases they desired time to take the matter up with the steamship companies. The Great Northern and the Chicago, Milwaukee & St. Paul, however, having traffic contracts or agreements with Japanese lines, expressed a willingness to co-operate with the Shipping Board for the upbuilding of an American merchant marine but declined to agree offhand to give up the agreements by which they receive many millions of revenue from import traffic which, they said, would otherwise probably go to Canadian lines, without being offered some satisfactory substitute. Commissioner Thompson, who with Commissioners Lissner and Plummer conducted the hearing, referred to this as a "discordant note" in the proceedings and several times tried to get the railroad officers to promise unqualifiedly to abrogate the contracts. He admitted that the Shipping Board could not make an exclusive contract with a railroad as a substitute for a foreign contract. R. M. Calkins, vice-president of the Chicago, Milwaukee & St. Paul, and W. P. Kenney, vice-president of the Great Northern, both urged that the present arrangements ought not to be disturbed unless it is required by law, on the ground that they have created a great deal of foreign trade for the Pacific coast ports of the United States and markets for the products of American industry, that they bring a large tonnage of import traffic to the American railroads who are able to control the routing of but little of the export traffic in return and that the breaking off of the contracts would have little effect on the routing of the traffic on the Pacific until the American lines build up a service superior to that of the Japanese and Canadian lines. Commissioner Thompson said the board was just as much concerned with retaining traffic for American railroads as with obtaining freight for American shipping and that some agency of the government ought to be able to protect the roads, but he did not suggest how it could be done. Both Mr. Calkins and Mr. Kenney agreed to take the matter up and give the board an answer as soon as possible but both said they would not recommend giving up the agreements voluntarily without something to replace them.

Position of the Shipping Board

In opening the hearing Frederick I. Thompson, chairman of the committee on interstate commerce conferences, made the following statement:

Any exclusive or preferential contract or agreement between any American railroad and any foreign flag shipping company is a menace to the success of ships operating under the flag of the United States. The resulting effect is the diversion of American commerce to the ships of other nations operating in competition with our own. Section 28 of the merchant marine act, 1920, clearly defines the intent of Congress that American railroads

be preferential feeders of tonnage for American ships. Yet it is of record before the United States Shipping Board that a number of railroads in the United States have such exclusive or preferential contracts with foreign flag shipping companies in direct conflict with the spirit of the American Congress.

It is also of record that more than 2,500,000 tons of cargo were interchanged last year between these railroads and ships operating under the flag of nations other than the United States. This is a condition admittedly requiring correction, recognizing the full force and effect of the enactment clause of the merchant marine act which clearly provides that "a greater portion" of the commerce of the United States be carried in American vessels.

This committee first approaches the question of these contracts in a spirit of desire for those corrective and co-operative measures as will insure that the influence and organizations of the rail carriers, at present agencies of promotion for the extension of American commerce in vessels of other nations, be utilized for the extension of American commerce in vessels operating under the registry of the United States. The United States Shipping Board is assured that the rail transportation interests represented here, parties to these adverse agreements, recognize that any losses arising through the initial upbuilding of an American merchant marine necessarily falls upon the American public. The board believes that any American enterprise, particularly those the beneficiaries of government support, should make every effort to co-operate in full and unmeasured degree with any division of the government, whose duty it is to build, foster and promote American enterprise.

To bring about such corrective condition this meeting between representatives of the railroads possessed of these agreements and this committee of the United States Shipping Board is held. The railroads and the contracts of record with foreign shipping interests are as follows:

Baltimore & Ohio.....	Denaldson Lines; Scandinavian Lines; North German Lloyd; Furness, Withy & Co. and International Mercantile Marine Company.
Great Northern.....	Nippon Yusen Kabushiki Kaisha.
Pennsylvania Railroad.....	International Mercantile Marine Company.
Northern Central.....	International Mercantile Marine Company and Furness, Withy & Co.
Southern Railway.....	Mobile Liners, Inc.
Mobile & Ohio.....	Mobile Liners, Inc.
Boston & Albany.....	Leland Steamship Lines and Cunard Steamship Company.
Chicago, Milwaukee & St. Paul....	Osaka Shosen Kabushiki Kaisha.
Atlanta, Birmingham & Atlantic...	Sirachen Shipping Company.
Grand Trunk System.....	White Star-Dominion Line.

Eastern and Southern Roads Acquiesce

Archibald Fries, vice-president of the Baltimore & Ohio, said its contracts with three foreign companies were entered into long before the American merchant marine was brought into existence but that there is no discrimination in their favor and the service given them is the same as that given to any of the 27 steamship lines that dock at its piers, so far as the facilities of the Baltimore & Ohio will permit. Mr. Thompson pointed out that the contract with the Donaldson lines provides for the free use of terminals and that the Baltimore & Ohio shall use its best endeavors to promote the business of that company. That is the objectionable feature as viewed by the board, he said, because there is no record of any pledge to promote the best interests of any American line. Mr. Fries replied that his road gave its best efforts to promote the interests of all lines docking at its piers and has tried to secure for the port of Baltimore as many lines as possible, assuring them in every case equal treatment. When Mr. Thompson asked if he had any objection to the cancellation of the contracts, he replied, "None whatever," and said he had consulted with the local agents of two of the companies, who expressed themselves as willing to recommend the cancellation on the ground that they assured no service that would not be accorded without the contracts. Mr. Thompson tried to get Mr. Fries to say at once that the contracts would be cancelled but he said it

would be necessary for him to consult his legal department, which had advised that the contracts are not in violation of any law. He assumed there would be no question.

Commissioner Thompson said that since 1918 the American lines have had adequate tonnage and asked if the Baltimore & Ohio had ever made an effort to make a contract with a Shipping Board line. Mr. Fries said it had considered the contract entirely inoperative and that it would not consider an exclusive contract with any line, believing it to be the best policy to take care of all to the best of its ability. Mr. Thompson said he had seen cases where the contract had operated to give preference to a foreign line and where proper facilities had been denied a line not under contract. When he repeated his request for assurance to the committee that the contracts would be cancelled, Mr. Fries said he would use his best efforts to have them cancelled, but that if the foreign lines decline he thought they should be allowed to lapse. The dates of expiration are 1922, 1926 and 1927.

Pennsylvania Has No Agreement

R. C. Wright, general traffic manager of the Pennsylvania, said that the Northern Central contracts were no longer in force and that the Pennsylvania had no traffic agreement with the International Merchant Marine, merely an arrangement for the allocation of certain piers made for the purpose of inducing lines to the port of Philadelphia and for the improvement of the service. Recently half of one of the piers used by the International Mercantile Marine had been turned over to an American line. Mr. Wright said that during the past three years 648 American vessels had used his company's piers as against 279 foreign ships. In reply to a question, he said his company would be willing to cancel the contract at once if the board desires it.

H. M. Biscoe, vice-president of the Boston & Albany, said the contracts with the Leland Line and the Cunard Line were practically a dead letter and both would be canceled in his opinion.

Lincoln Green, vice-president of the Southern, said his company intended to cancel the contracts with the Mobile Liners anyway and would do so at once.

D. O. Wood, foreign freight agent of the Grand Trunk, said that his contract was a reciprocal traffic agreement and that 80 per cent of the cargo was Canadian grain delivered at Portland, Me., during the winter. He said it would be necessary to confer with the principals on the abrogation of the contract.

J. L. Edwards, assistant to the receiver of the Atlanta, Birmingham & Atlantic, said the contract with the Strachen Line was not now in existence because of the physical condition of the docks and also because it was not assumed by the receiver. He promised to confer with the board before executing any new contract.

Great Northern and St. Paul Reluctant to Give Up Agreements

W. P. Kenney, vice-president of the Great Northern, said that his company's contract with the Nippon Yusen Kaisha was dated November 1, 1911, and had expired but had been renewed with slight changes on October 18. The original contract was negotiated 25 or 30 years ago by James J. Hill and was exclusive, the purpose being to promote the movement of cotton to Japan and to get cargo from Japan for the Great Northern rails. This was the first Japanese line to give a regular service across the Pacific. Later the law was passed giving the shipper the right to control the routing and the Nippon Yusen Klen built up a large soliciting organization of its own in the United States which has far more to do with influencing the routing than the railroad has. It also has an extensive organization and connections in the Orient which give it the control of the

inbound tonnage to the United States and it acts as the agent of the road in the Orient, thereby giving the road practically all its inbound tonnage, while the road gives a very little in return because it has so little control over the routing.

In reply to questions by Mr. Thompson he admitted that the Shipping Board equipment in the Pacific Orient service is of the highest type and that he appreciated that the United States Government is operating its ships at a loss. Mr. Thompson asked then why he had neglected to confer with the board before making a new contract with a direct competitor.

"I didn't think there was any possibility of any Shipping Board line across the Pacific making an exclusive contract with any American railroad," said Mr. Kenney, "while we had a preferential contract which was very advantageous to us. The shippers have their preferences and we couldn't get 1,000 tons a year for any other line, if we had no contract, because the business is so closely tied up."

Mr. Thompson said: "The Great Northern on October 18 went into direct competition with the United States government in its efforts to build up an American merchant marine" and asked Mr. Kenney what his feeling was about abrogating the contract. "I don't want to let your statement go unchallenged," retorted Mr. Kenney. "This is only an extension of a contract that has been in existence for 25 or 30 years. Up to the present time there has been no other service available to the Great Northern. In proportion to our resources we have lost more money carrying the American flag on the Pacific than the United States government has. We are not opposing any measures of the Shipping Board to promote American commerce but we should not be condemned for carrying out our contract. When you talk about patriotism you might also talk to the shipper in this country who is shipping by the Canadian Pacific because he prefers its service on the Pacific. That agreement with the Nippon Yusen Kaisha is very valuable to the Great Northern and we want to hold it as long as we can until some substitute is given us that is as good. Why should we work with a line that cannot make a contract and is as likely to turn its inbound freight over to the Canadian Pacific as to us?"

Mr. Thompson said he had not said anything about patriotism nor attempted to "wave the flag," but that he was talking business and that the Great Northern had given the board no opportunity to offer its service.

"I know enough about the law to know the board couldn't make any exclusive contract," said Mr. Kenney.

"It could take care of all of your business," said Mr. Thompson.

"But the N. Y. K. gives us business in return," said Mr. Kenney.

Business Might Go to Canadian Roads

With the preferential clause in it, Mr. Kenney said, he supposed the Shipping Board could object to the contract. Asked if he would abrogate the contract, he said he had no authority to do that and he would have to put the question up to his president. Mr. Thompson asked if he would not do so by wire. Mr. Kenney said he would want an opportunity to confer on the subject and asked if he could not submit a contract that might be approved by the Shipping Board that would not make it necessary for the road to throw the business to the Canadian Pacific. Mr. Thompson persisted in asking whether, assuming the Shipping Board would not approve any contract, Mr. Kenney would give assurance that any contract considered by the board to be adverse to American interests would be cancelled. Mr. Kenney said that his disposition was to be helpful but he would want time to consult on this. Commissioner Lisner asked if the railroad officers were not aware of the agitation against these foreign contracts when the contract with the

Japanese line was renewed. Mr. Kenney replied affirmatively, but said that if his company had refused to renew it, the contract would probably go to a Canadian road, which would give the Japanese line dock facilities at Victoria or Vancouver and this would be of no benefit to the American merchant marine. Mr. Lissner said that the law provides that such a contract is lawful only so long as approved by the Shipping Board and that the company had failed to file it with the board or consult with the board about it. Mr. Kenney said he had not understood it was necessary to get the approval of the board, although the board had been advised that the company intended to make a new contract. Much American freight, he said, is now going to the Canadian Pacific because of its superior service on the Pacific. When the Shipping Board has a superior service it will get the business. He promised to take up the matter with the president of the road and to advise the board promptly.

Insists C. M. & St. P. Contract

Beneficial to U. S. Trade

R. M. Calkins, vice-president of the Chicago, Milwaukee & St. Paul, insisted that his company's relations with the Osaka Shosen Kaisha have been beneficial to the trade of the United States. The contract is no longer in existence, he said, but there is a tacit understanding for the interchange of tonnage on about the same basis as provided in the contract during the latter years of its life. The St. Paul has done, and will continue, he said, to do all it can to foster American shipping and it has taken a deep interest in the efforts of the Shipping Board to build up a service on the Pacific coast. It is grateful for the beautiful ships that were recently put into the North Pacific coast service and it has spent a good deal of money to advertise that service, but as to the freight business the routing is largely controlled by the shippers and the railroad has very little to say about it.

The Japanese have their own ships and the shippers in the Orient naturally prefer to patronize their own lines. If a bar is put up against this traffic, it would be easy for it to be handled through the canal and by water to Atlantic ports where there is a comparatively slight rail haul to be considered, because a large part of the Oriental business originates or is destined to ports east of Chicago. A bar against this traffic through the North Pacific coast would simply deprive the American lines of the opportunity to participate except for the short haul inland from the Atlantic seaboard. The Osaka Shosen Kaisha is firmly entrenched in the Orient, he said, and if American lines want to control the business, they must fortify themselves in the same way, because to operate ships successfully they must be loaded in both directions. The railroad has never been advised that there was a dependable American service on the Pacific coast and in order to solicit business it is necessary that regular sailing schedules be maintained so that space can be reserved in advance. He also pointed out that whereas Canada prevents most of her exports from being handled through other than Canadian ports, enough American goods are sent out via Canadian ports to fill up a good many American ships. Mr. Thompson said the board is just as much concerned with fostering business for American railroads against Canadian railroads as it is with getting business for American ships and he had discussed with the Interstate Commerce Commission the question of protecting the American lines. Mr. Calkins said that the Interstate Commerce Commission is vested with authority to deal with the situation if it will do so.

Mr. Calkins said that the agreement provides that each party shall give preference to the other as against competing lines. When Mr. Thompson said that means that the

St. Paul will give preference to the Osaka Shosen Kaisha as against the government service from Puget Sound to the Orient, Mr. Calkins said that language was put in the contract in 1908 and conditions have been altered since then. The road would be willing to cancel the preferential clause, but as to the abrogation of the contract entirely, it would depend on what substitute could be made for it. The present traffic is balanced and gives many millions of revenue to the railroads. "I am sure," he said, "this committee would not ask me to recommend that we give up that business unless I have something tangible with which to replace it."

Rate Question Also Involved

The rate question is also involved, Mr. Calkins said, citing a case where a Shipping Board vessel had recently quoted a rate of 65 cents to New York on crockery from China as against a rail rate of \$1.50. Commissioner Thompson said that the railroad is apparently unwilling to take a chance in order to do business with American ships. He recognized the problem involved in the inbound traffic and said that it may be true that some of it might be lost to the St. Paul, but he thought some assurance could be given that it would be confined to American lines. Mr. Calkins said that he was sure the board did not expect to secure tonnage at the expense of the Great Northern or St. Paul treasuries, to which Mr. Thompson replied that there would be no loss on the outward cargo. Mr. Calkins said he could not admit that, because 80 per cent of it originates east of Chicago and he doubted whether the railroads and the Shipping Board together could control it if the foreign steamship companies prefer to handle it by way of Canada or through the Panama Canal to the Atlantic seaboard. Mr. Thompson said the board would like to have the same kind of co-operation from the St. Paul that it now gives to the Japanese line and while there may be some loss of inbound traffic there is some agency of the government that can give some protection. Mr. Thompson again asked if the railroad would abrogate the contract, saying that he had preferred to discuss the question on a friendly basis rather than on a legal basis. Mr. Calkins said he would want to discuss further the question of what can be done to replace the contract. His company has made no money for its stockholders for five years and he would not be justified in sacrificing the revenue without any assurance.

Board Issues Statement

Commissioner Thompson issued a statement, saying that the attitude of the railroads with respect to those contracts had been reported to a full meeting of the board, and that the members were gratified at the willingness of the railroad companies to follow the views of the government. The statement also indicated his belief that the Great Northern had committed itself to abrogate the contract.

"The conclusion of the Shipping Board that the agreements were harmful to the development of American vessels," said Commissioner Thompson, "was clearly defined to the railroad executives present, and it was considered a good augury to have evidenced the disposition of the rail carriers to form a closer working contact with the organization of the Shipping Board, looking toward an extension of American commerce in American vessels. "It was particularly gratifying to the board to hear the expression of the two trans-continental carriers, handling the major portion of the Pacific-Orient commerce, that the establishment of an American flag service from the Pacific Coast to the Orient had resulted in a record-breaking service as to time and accommodations. The Shipping Board felt confident that upon reflection the Chicago, Milwaukee & St. Paul, the only company whose representative would not guarantee to recommend to his associates the cancellation of its agreements

with the Osaka Shosen Kaisha, would recognize the necessity of meeting not only the views of the board, with respect to its contract with this foreign company, but would fall in line with the spirit evidenced by all of the rail lines who were represented at the meeting and who possess similar agreements."

Commissioner Thompson has asked the roads to give him written confirmation of their statements regarding the abrogation of the contracts.

Possibility of Ship Subsidy

President Harding has let it be known that he intends to go before Congress early in January with a special message advocating some form of a ship subsidy to assist in the development of the American merchant marine. The form of subsidy to be proposed has not yet been decided upon but will be based on recommendations to be made in a report from the Shipping Board which is making a study of the whole situation, under the direction of Commissioner Meyer Lissner, assisted by a committee of economic experts. It is hoped to substitute this plan for that contemplated in the Jones merchant marine act of assisting American shipping by preferential rail rates and other discriminations against freight shipped in foreign bottoms. It is also hoped by this plan to hasten the day when the Shipping Board will be able to sell its ships to private companies and get the government out of the business of ship operation.

Calm Again Marks Railroad

Labor Situation

ONCE MORE comparative calm prevails in the railroad labor situation. The recent rules regarding the working conditions of shop employees promulgated by the Railroad Labor Board, and announced in last week's *Railway Age*, have been received with widely varying attitudes, ranging from severe condemnation to tacit approval. From B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, who is largely responsible for the attitude which the employees will take toward these new rules, came only the brief statement that no definite action would be taken by the Federated Shop Crafts until after the first of the year. Other labor leaders connected with the Federated Shop Crafts, however, have expressed approval of various sections of the new rules and it is considered unlikely that any radical action will be taken on this issue alone. At the same time, it is recognized, because of the past policy of these organizations, that it is not improbable that the changes which have been made in the working conditions of the shopmen will be used as a strong argument against any further reductions in the wages of these employees.

Samuel M. Felton, president of the Chicago Great Western, in commenting upon the new rules, said:

The ruling of the Railroad Labor Board, promulgating new rules to govern the working conditions of railway shop employees, contains provisions which should tend to remedy, to some extent, the waste and inefficiency caused by application of various rules of the National Agreements adopted during federal control. However, the decision does not give relief from the bad effects produced by the application of most of the working rules throughout the country regardless of widely varying local conditions. To this extent the decision represents a denial of the railroads' plea. The effects produced by these new rules can be properly appraised only after they have been in effect for some time. It is not improbable, however, that a large part of the objections made by the railroads to the rules in the National Agreement will apply with equal force to these new rules, unless, as in some cases authorized by the Board, they are modified by agreements between the individual lines and their employees. It is quite evident from an examination of the rules as promulgated by the Board that

the savings to the railways in money which will be effected by the changes it has made will not relieve the railways of a really substantial part of the burden imposed by the National Agreements.

Labor Board Takes Up Maintenance

Of Way National Agreement

On December 8 the Railroad Labor Board began consideration of the disputes in regard to the rules and working conditions of maintenance of way employees. The Board's action on these disputes will probably result in the modification of the National Agreement between the Railroad Administration and the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers which became effective December 16, 1919. This National Agreement has been superseded on some 35 or 40 railroads by subsequent agreements between the carriers and the men involved and these agreements will not be affected by the Board's action. Where rules have been agreed to in part by the carriers and the men the agreed rules will stand.

Approximately 95 railroads are directly involved in the present disputes, but the decisions as to them will affect others which may afterward come before the Board. Of the 83 rules in this National Agreement all are in dispute before the Board. However, an agreement has been reached on most of these rules on a majority of the lines. The six rules over which a majority of the roads and their maintenance of way employees have disagreed relate to overtime and similar subjects and to pay for time of men traveling to and from work.

Clerks Request Wage Increase

Following the lead of the Federated Shop Crafts in requesting increases in wages as a strategic move to offset the requests of the carriers for further wage reductions, the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Station and Express Employees, through E. H. Fitzgerald, its president, has issued instructions to its general chairmen on the various carriers to demand the restoration of the rates of pay in effect prior to the 12 per cent wage cut of last July.

New England Roads Win Case

A minor decision, significant, however, to five New England carriers—the Boston & Maine, the Maine Central, the New York, New Haven & Hartford, the Central New England and the Portland Terminal—was recently handed down by the board. This decision rules that the differential now existing between the daily rate of pay of employees working on a six and seven-day per week basis (caused by the application of Rule 66 of the clerks' National Agreement to daily and hourly rated employees) should be abolished by reducing the daily rate of the seven-day per week employees to the same daily rate paid the six-days per week employees. The change is effective on December 16.

B. W. Hooper Tells of Labor Board's Work

Reports to the United States Railroad Labor Board show steadily improving conditions among the railroads of the country, Ben W. Hooper, vice-chairman of the Board, said in a statement on December 5. Mr. Hooper pointed out that the Board's decision not to consider wage reductions for any class of employees until working rules for the class had been disposed of had not delayed consideration of wage disputes on any railroad or for any class of employees. His statement follows:

The railroad situation is more conducive to optimism than it has been for many months. The absence of any serious general labor disturbance, combined with the disposition of the carriers to make voluntary reductions in freight rates, will both contribute to the restoration of sound business conditions.

The Labor Board receives evidence every day of the more cordial co-operation of the carriers and the employees in carrying out the provisions of the Transportation Act. Another gratifying feature of the situation is that the public is manifesting an awakened interest in the work of the Board.

If it be a fact that the Labor Board is solely dependent on public opinion for the enforcement of its decisions, then it is highly important to the public that it be furnished correct and impartial information relative to the work of the Board.

The misleading statements that have been fed to the public in regard to the alleged methods employed to avert the recently threatened strike have been completely refuted by the subsequent work of the Board.

It has been amazingly reiterated that the Board or some of its members promised that there should be no consideration of the question of wages for a year, or until next July as it was frequently put. As a matter of fact, the Board merely said that it would not take up any readjustment of wages, upward or downward, for any class of employees, until the rules and working conditions for that particular class of employees had been decided.

This was a sensible and just exercise of the Board's discretion in arranging its own docket. It did not involve the promise of a delay of one year, one month, or one minute in the consideration of the wage question.

As a vindication of the Board's course in this matter, it now transpires that the shop craft rules have been finished and handed down, effective December 1, and neither the

carriers nor the crafts can get before the Board with a wage dispute for weeks.

In an address before the Chicago Association of Commerce several days previous Mr. Hooper, in commenting on the railroad labor problem, said:

There are grounds for optimism in the railroad situation. Under ordinary conditions there is an esprit de corps among the railroad workers that is highly conducive to the welfare both of the carrier and the public. This spirit should be encouraged and enlarged until railway employees feel as deep a sense of responsibility to the people and the government as though they were in the postal or other public service.

From this will come efficient and uninterrupted transportation, and the employees need have no fear that a grateful people will fail to reward this service with just and reasonable wages and working conditions. Gradually railway labor will come to entertain the belief that they must fight for what is justly due them or to be subject to the temptation to contend for more than their due.

In this connection it is but just to state a fact based upon the records of our Board, and that is that up to the present time the carriers have been guilty of far more violations of the decision of the Labor Board than have the employees. There are evidences, however, of a growing purpose both on the part of the roads and their employees to co-operate hereafter more closely and cordially with the Labor Board.

Interstate Commerce Commission Annual Report

Rate Readjustments and Relations with Merchant Marine Leading Topics Discussed

WASHINGTON, D. C.

THE ANNUAL REPORT of the Interstate Commerce Commission, covering the year ended October 31, 1921, submitted to Congress this week, says that perhaps the most difficult task now confronting the commission, and certainly the one of greatest importance to the public, is the readjustment of freight rates which is necessitated by the changing conditions attendant upon the recovery of this country and others from the effects of the World War. The commission is "hopeful that with an improvement in the volume of traffic and with a further adjustment of operating costs in harmony with prevailing tendencies, a substantially lower level of rates and fares will be compatible with the rule of rate-making which has been prescribed by the Congress and at the same time permit an adequate maintenance of the properties." The report was compiled prior to the issuance of the order for a general rate inquiry on which hearings are to begin on December 14, but the discussion of rate readjustments and of the action of the commission with relation to intrastate rates is given first place in the report.

Summary of Recommendations

For the reasons stated in this report and in former reports, the commission recommends:

1. That section 1 of the interstate commerce act be amended to provide for the punishment of any person offering or giving to an employee of a carrier subject to the act any money or thing of value with intent to influence his action or decision with respect to car service, and to provide also for the punishment of the guilty employee.

2. That the boiler-inspection act, as amended, be further amended to provide for increases in the number and salaries of inspectors.

3. That the use of steel cars in passenger-train service be required, and that the use in passenger trains of wooden cars between or in front of steel cars be prohibited.

4. That the hours of service act of March 4, 1907 (34 Stat., 1415; 8 Comp. Stat. 1916, p. 9448), be so amended that it will require all service of employees subject to the act

to be construed as continuous service, except that if an employee is given a release from duty for a definite period of not less than three hours, and under such circumstances that the employee has proper facilities and opportunities for securing rest during such relief period, such relief period can be used to break the continuity of the service and the service ceases to be continuous service and becomes aggregate service.

5. That the power to award reparation be placed wholly in the courts; that a condition precedent to an award of reparation by a court for unreasonable rates or charges be that we have found such rates or charges unreasonable as of a particular time; that the law affirmatively recognize that private damages do not necessarily follow a violation of the act; that provision be made that sections 8, 9, and 16 of the interstate commerce act shall be construed to mean that no person is entitled to reparation except to the extent that he shows he has suffered damage; and that the law should provide that if a rate is found to be unreasonable the rule of damages laid down in the *International Coal Case*, 230 U. S., 184, should control.

6. That section 20a of the Interstate Commerce Act be so amended as to indicate definitely the classes of electric railway companies subject to that section.

7. That paragraphs (4) to (8), inclusive, of section 5 of the Interstate Commerce Act be so amended or supplemented as clearly to provide whether and, if so, how voluntary consolidations of carriers may be effected pending ultimate adoption by us of a complete plan of consolidation.

8. That section 19 of the merchant marine act, 1920, be amended so that its provisions will clearly not be applicable to the Interstate Commerce Commission.

9. That section 28 of the merchant marine act, 1920, be reconsidered by the Congress in the light of the circumstances set forth in the chapter on the effect of this statute appearing at pages 13 and 14 of this report.

An abstract of the more general parts of the report is as follows:

Abstract of Report

During the war, and for some time after the signing of the Armistice, the constantly rising operating expenses of the railroads made necessary very material increases in rates. It is unnecessary to refer particularly to what may be called minor readjustments, affecting only one or a few commodities in a restricted territory, although many of these resulted in substantial increases.

The Congress is familiar with the situation of the railroads at the termination of federal control, and with the various provisions in the transportation act, 1920, designed to remedy that situation. Among other things, the Interstate Commerce Act was amended by adding a new section, designated section 15a.

Following this enactment we instituted a proceeding to determine what rates would be necessary to give effect to the intent of Congress. Since that decision was promulgated on July 29, 1920, conditions throughout the country have changed to a marked degree. The general trend of commodity prices and of labor costs has been downward.

We have been confronted with the demands of shippers, on the one hand, for reductions in rates which they allege are excessive and out of all proportion to the fallen values of commodities, and which interfere with, or prevent, commodity movement; and, on the other hand, with the fact that the carriers have not been receiving the fair return contemplated by Congress.

Many rate readjustments have been made since the increases authorized in *Increased Rates*, 1920, *supra*, became effective on August 26, 1920. Some were made by the carriers voluntarily, others at our suggestion, and still others under our requirement after formal hearing. In some adjustments there were both increases and decreases, and in many others only decreases. It is safe to say that at least a million changes in individual rates have been filed with us. The increases were made to remove discrepancies in rate adjustments and classifications. The reductions have been material, entailing reductions in carrier revenue of millions of dollars. The reductions embrace rates on lumber, grain, hay, raw sugar, canned goods, coal, smelter products, iron ore, iron and steel; on range cattle and other live stock; on potatoes and other vegetables; on sand, gravel and other road-building material; and on other articles of commerce that move in large volume.

The value of the service and the cost of transportation are among the important elements to be considered in determining the reasonableness of freight rates. These elements are, and for some time have been, in a state of flux. As a result, freight rates have not yet reached a condition of equilibrium.

Interstate and Intrastate Rates

As previously stated herein, we instituted a proceeding designated Ex Parte 74, in which hearings were held in Washington in May, June and July, 1920. In accordance with the provisions of paragraph (3) of section 13 of the act we invited the state commissions to cooperate with us in this proceeding, whereupon three state commissioners were selected by the National Association of Railway and Utilities Commissioners and sat with us throughout the hearings and oral argument and deliberated with us in conferences antecedent to our determination of the matters in issue.

As a result of the information obtained, we concluded that for the purposes set forth in section 15a, the country should be divided into four groups, designated eastern, southern, western and mountain-Pacific; that, with certain exceptions, passenger fares should be increased 20 per cent, with a 50 per cent surcharge on sleeping and parlor car fares to accrue to the rail carriers; and that, generally, freight rates should be increased 40 per cent in the eastern group, 25 per cent in the southern group, 35 per cent in the western group, 25 per cent in the Mountain-Pacific group, and 33½ per cent between groups, subject to the readjustments there recommended.

Corresponding increases were authorized by state commissions in about one-half of the states. In the other states the state commissions denied, either wholly or in part, the carriers' applications for similar increases, whereupon the latter filed petitions with us, in accordance with the provisions of paragraph (3) of section 13, alleging that such refusals caused advantages, preferences, prejudices and discriminations prohibited and declared to be unlawful by paragraph (4) of section 13.

In these cases it appeared that the commissions in 3 states declined to authorize any increases in intrastate rates, fares, or charges; in 17 they denied increases in passenger fares, but granted full or partial increases in freight rates; in 4 they granted increases in passenger fares, but not the full increases in freight rates; in one the state commission granted all increases except the Pullman surcharge. Thirteen out of the 17 commissions which denied increases in passenger fares did so on the ground of lack of jurisdiction, because the intrastate fare was fixed by state statute.

Pursuant to said petitions we instituted additional proceedings, and after hearings, we found that certain of the intrastate rates or fares and charges complained of caused undue and unreasonable advantages, preferences and prejudices as between persons and localities in intrastate commerce on the one hand, and interstate commerce on the other hand, and undue, unreasonable and unjust discrimination against interstate commerce; whereupon, for the purpose of removing such advantages, preferences, prejudices and discriminations, we issued orders requiring the carriers involved to make certain increases in intrastate rates or fares and charges. To meet complications which early arose, we stipulated that the authority to increase rates, fares and charges should not be construed as authorizing any common carrier to establish, put in force or maintain any rate, fare or charge intrastate which is greater than its corresponding rate, fare or charge in interstate commerce from, to, or at the same points, or greater than its corresponding rate, fare or charge contemporaneously in effect and applicable to the transportation of passengers or property in interstate commerce.

Court proceedings have been instituted by the authorities of certain states to set aside the orders affecting their respective states on the grounds, generally, that the orders were invalid, first, because not based upon substantial evidence of unlawful discrimination; second, because we had misinterpreted the authority conferred upon us by the interstate commerce act; and third, because the provisions of law under which we acted constitute an unauthorized interference with state authority and are unconstitutional. Certain carriers have also sought injunctions in the United States district courts to restrain state authorities from interfering with their carrying out of our orders. Hearings have been had in a number of these cases, and so far as we are advised, the federal courts have held our orders to be valid.

Two cases involving such orders have been argued before the Supreme Court. One of them, known as the *Wisconsin Passenger Fares Case*, has been set for further argument. In addition to the two cases mentioned, two original proceedings have been instituted in the Supreme Court, one by the state of North Dakota, and the other by the state of Texas. The Texas case, apparently, raises every conceivable issue. The provisions of section 15a of the act do not apply to express companies, but we now have before us proceedings as to 13 states wherein it is contended that certain rates and charges, which the American Railway Express Company is required by these states to apply to transportation of express matter in intrastate commerce, cause the advantages, preferences, prejudices and discriminations prohibited and declared to be unlawful by paragraph (4) of section 13 of the act.

Consolidation of Railroads

On May 11, 1920, we instituted an investigation for the purpose of preparing and adopting a plan for the consolidation of the railway properties of the continental United States into a limited number of systems as contemplated in paragraphs (4) and (5) of section 5 of the interstate commerce act. Prof. W. Z. Ripley, of Harvard University, was employed to make a preliminary study of the problem. Under our direction he spent several months assembling and analyzing data and conferring with interested parties. The results, together with his recommendations, were embodied in a report to us. On August 3, 1921, we agreed upon a tentative plan confined, in the main, to class I roads, and published Prof. Ripley's report as an appendix thereto. In some respects our tentative plan presents alternatives for systems recommended by Prof. Ripley.

Due publicity has been given to this tentative plan. After a reasonable time for preparation by parties interested, hearings will be held at convenient times and places upon notice, given to all carriers by railroad, so that a full record can be developed upon which can rest the plan to be ultimately adopted.

Railroad Earnings

Railroad earnings and expenses during the past year reflect the unsettled industrial conditions resulting from the economic adjustments following the war. In 1920, the rising cost of labor and materials led us to sanction a sharp increase in the charges for transportation. These increases became effective near the close of August, 1920, which was the last month of the guaranty period. The increased rates, combined with a volume of traffic that taxed the capacity of the railways, resulted, in spite of the high costs of operation, in substantial increase of net earnings in September and October, 1920, but these did not attain a level equivalent to a rate of 6 per cent per annum upon the aggregate value of the railway property of the carriers held for and used in the service of transportation, as determined by us in July, 1920, under section 15a. Net earnings fell rapidly after October, 1920, reaching almost a vanishing point in January, 1921. The inability of railroads at once to adjust expenses, proportionately to a marked reduction in traffic, accounts for the change. With a reduction of nearly half a million employees in service, and also as a result of some recession in the cost of materials, the net railway operating income showed an improvement in succeeding months. The reduction in expenses involved some retrenchments with respect to maintenance. With the reduction in the level of wages effective as of July 1, 1921, the net earnings in July, August and September, 1921, again showed substantial increase, although not reaching a rate of 6 per cent on the value so determined for the United States as a whole. This more favorable showing came in spite of the continued depression in traffic.

Relations with the

Railroad Labor Board

Under the provisions of the transportation act, 1920, the Railroad Labor Board is given certain jurisdiction over the wages which shall be paid by carriers to their employees, and over working conditions. While the law makes no provision for co-ordination between the labor board and the commission, the desirability of contact between the two bodies is appreciated. Since the creation of the labor board, informal conferences have been held from time to time, and will, without doubt, be continued in the future. We have been particularly solicitous to procure and have at hand such statistical information as may aid the labor board in its work.

Relations with the

United States Shipping Board

Section 19 of the merchant marine act, 1920, provides in part as follows:

"Sec. 19 (1) The (United States Shipping) Board is authorized and directed in aid of the accomplishment of the purposes of this Act * * *

"(c) To request the head of any department, board, bureau or agency of the government to suspend, modify or annul rules or regulations which have been established by such department, board, bureau or agency, or to make new rules or regulations affecting shipping in the foreign trade other than such rules or regulations relating to the Public Health Service, the Consular Service and the Steamboat Inspection Service."

The United States Shipping Board has taken the position that the provisions of section 19 are applicable to the Interstate Commerce Commission. With this view we are not in accord. However, recognizing the desirability of co-operation between different branches of the government, and the benefits to be derived from joint consultation, we have appointed a committee

to confer with a like committee from the Shipping Board upon matters of common interest and concern. But we feel that decision in such matters as have been placed within our jurisdiction by the interstate commerce and related acts must lie with us just as determination of matters placed primarily within the jurisdiction of the Shipping Board by the acts under which it functions must lie with that tribunal. It is desirable that section 19 of the merchant marine act be amended specifically to exclude this commission from its operation.

Section 8 of the merchant marine act, 1920, requires the United States Shipping Board, in co-operation with the Secretary of War, to investigate territorial regions and zones tributary to ports; the causes of congestion of commerce at ports; the subject of water terminals, and other matters which would tend to promote and encourage the use by vessels of ports adequate to care for the freight that would naturally pass through such ports, and in case changes are deemed necessary in the rates, charges, rules or regulations of rail carriers, subject to our jurisdiction to submit its findings to us for such action as we may consider proper under existing law. Pursuant to section 8, the Board of Engineers for Rivers and Harbors made a survey of port facilities at south Atlantic and gulf ports, and on March 25, 1921, the Secretary of War and the United States Shipping Board placed the results of this survey before us. In substance it was represented to us that the charges, regulations and practices of rail carriers at these ports were preventing the erection of needed terminal facilities; the natural development of the ports; the proper building up of our merchant marine, and the economical carrying on of foreign commerce. On April 9, 1921, we entered an order instituting a general investigation into the situation. Hearings in this investigation have been held. Necessity may be developed for extending the scope of the investigation to include north Atlantic and Pacific coast ports.

Section 28 of the

Merchant Marine Act, 1920

Section 28 of the merchant marine act, 1920, provides that no lower rate, fare or charge shall be charged, collected or received for the transportation within the United States of persons or property in foreign commerce than is charged for like transportation in domestic commerce, unless the water transportation from or to the port of export or import shall have been or is to be in a vessel documented under the laws of the United States. It also authorizes us, upon the certification of the Shipping Board that adequate shipping facilities are not afforded by vessels documented under the laws of the United States, to suspend the operation of the provisions of this section, and to terminate the suspension upon further certification of the Shipping Board that adequate facilities are so afforded. Upon appropriate certifications received from the board, we have suspended the operation of the provisions of this section indefinitely.

The effect which the operation of section 28 may have upon the flow of commerce through different ports, and the possible resultant injury to some ports, merit the serious consideration of the Congress. Rail carriers, in making export or import rates, frequently group the ports in a given region, such for instance, as the gulf region, and the lowest domestic rate to or from any port in the group upon the particular description of traffic under consideration is published as the export or import rate on

that traffic to or from all ports within the group. The grouping is of benefit to shippers as well as to the ports affected, each one of which is nearer to some points of origin, and more distant from others, than any of the other ports. It follows that between certain origins and certain ports export or import and domestic rates are on a substantial parity. Even in the absence of such grouping, the difference between the export or import and domestic rates to or from various ports is materially greater in some instances than in others. When section 28 becomes operative, it is probable that export and import shipments moving in foreign vessels will seek the ports having the lowest domestic rates, and at these ports the foreign vessels will be able to compete upon practically equal terms with the United States vessels. The ultimate effect of section 28 may be merely to divert traffic from certain ports to others with little or no gain in tonnage for United States vessels.

The adequacy or inadequacy of shipping facilities afforded by vessels documented under the laws of the United States may vary from time to time dependent upon market conditions and the hazards of operation. It may become desirable, when adequate shipping facilities at particular ports are afforded by vessels so documented, to terminate the suspension of the operation of section 28 with respect to those ports, but not as to others. Subsequent developments may make renewed suspension necessary. The construction and maintenance of port facilities are costly, and if the use of ports is to be made variable and shifting under the operation of this section, that cost will be reflected in varying proportions in the charges to be borne by the shipping public.

Another aspect also merits careful consideration. A large part of our exports of grain, for example, move by rail under transit arrangements which permit of elevation, storing, grading or other treatment within a limited period, as for instance 12 months, at the transit point, and forwarding on the balance of the through rate in effect at the time and from the place of original movement. If section 28, now suspended, should become operative, shipments of grain could thereafter be carried in the same train from the same elevator to the same port for the same foreign vessel, on some of which the balance of the through export rate, which was in effect perhaps a year before, will be collected, and on other of which the higher domestic rate must be collected. If for some cause the suspension should be renewed, grain which had left the country elevator while section 28 was operative, would still take the domestic rate from the transit point, and grain originally shipped during the new suspension would take the export rate, although moving together from the same market to the same port for the same foreign vessel. The difficulty of policing such situations will be great. Moreover, grain dealers at primary markets name prices to foreign purchasers on grain delivered at the port. The purchasers arrange for the vessel, and the dealer can not tell, in naming his price, whether or not a foreign vessel will be selected by the purchaser. Obviously the dealers' risk of loss will be great, and the effect upon commerce most prejudicial.

In our judgment, the Congress should take such action with respect to this section as may be necessary to obviate unnecessary conflict with the needs and usages of inland transportation.

Export Bill of Lading

The transportation act, 1920, added to the interstate commerce act, a new section, design-

nated section 25, which requires water carriers engaged in foreign commerce whose vessels are registered under the laws of the United States, to file with us schedules of sailing dates, routes and destinations, which schedules shall be published by us and distributed to railway agents, at points designated by us, for the information of shippers; provides a method of procedure for reserving space at specified rates in the vessels of such water carriers; and, where such space for an export shipment has been reserved, directs the rail carrier to which the shipment is delivered for transportation to issue a through export bill of lading to destination.

Paragraph (4) of section 25 provides, in part: "The Commission shall, in such manner as will preserve for the carrier by water the protection of limited liability provided by law, make such rules and regulations not inconsistent herewith as will prescribe the form of such through bill of lading."

On April 14, 1919, we made a report and order in *Bills of Lading*, 52, I. C. C., 671, wherein we prescribed a uniform domestic bill of lading and a uniform export bill of lading. Our order was enjoined by a divided court in *Alaska S. S. Co. v. United States*, 259 Fed., 713.

The Supreme Court held, on appeal, that the case was made moot by the passage of the transportation act, 1920, and reversed the order of the district court, remanding the case to that court with directions to dismiss the petition without prejudice to the right of the complainants to assail in the future any order we might make prescribing bills of lading pursuant to the new legislation.

On August 7, 1920, we entered an order reopening *Bills of Lading*, *supra*, for further hearing with respect to the form and substance of through export bills of lading. Pursuant to the directions of Congress quoted above, we made a report and order, *Export Bill of Lading*, 64, I. C. C., 347, making rules and regulations prescribing the form of through export bill of lading to be issued by carriers subject to the interstate commerce act for application to the transportation of property from points in the United States designated under the provisions of section 25 to points in nonadjacent foreign countries in connection with ocean carriers whose vessels are registered under the laws of the United States.

The inland carriers, and more particularly the eastern carriers, challenged our jurisdiction to do more than prescribe the "form" as distinguished from the substance of the bill of lading, their illustrations of form being size of type and color of paper. For the reasons stated in our report, we found that:

"* * * our power to prescribe rules and regulations, not inconsistent with the act, which shall constitute and determine the form of the bill of lading, covers the terms or tenor of that instrument, and is, as to the transportation until delivery to the ocean carrier, adequate and complete."

The ocean carriers beyond the port of export, however, are not subject to the act except to the extent stated in section 25. Additional legislation may become necessary to carry out the purpose of the Congress.

All parties to the proceeding emphasized the importance of securing a bill of lading that would be placed in general use at once. We have taken such action, consistent with the record before us, as in our view seems calculated to effect this object. Before adopting the report and order, we conferred with a committee of the Shipping Board representing that body.

The commission's expenditures for the fiscal year ended June 30, 1921, were \$6,193,714, including \$2,728,656 on account of the valuation work.

Abstracts of the reports of the various bureaus of the commission, which are included in its report, are given separately.

THE GOVERNMENT RAILWAY in Alaska was opened through to Fairbanks on November 26. A total of 545 miles of railroad is now in operation with train service twice a week in each direction. At two river crossings temporary arrangements are still used. At Mile 347 a steel viaduct is to be constructed, contract for which is held by the Phoenix Bridge Company, Phoenixville, Pa. The steel for this viaduct has been shipped and it is expected to have the bridge erected by the first of February. This will complete the

line with the exception of a permanent crossing of the Tanana river at Nenana, about 35 miles from Fairbanks, the northern terminus. The appropriation recently granted by Congress for work of the Alaskan Engineering Commission for the next fiscal year is principally to take care of this bridge. The crossing is now made by means of a ferry in the summer time, and by extending a narrow-gage track over the ice in the winter time. When the bridge is built, the gage of the track from North Nenana to Fairbanks will be standardized.

Freight Car Loading

WASHINGTON, D. C.

LOADING OF REVENUE FREIGHT totaled 673,827 cars during the week which ended on November 26, according to reports compiled by the Car Service Division of the American Railway Association. This was 112,844 cars less than were loaded during the previous week, the decrease being due principally to the observance of Thanksgiving Day. The total, however, was 129,874 cars less than were loaded during the corresponding week in 1920 which also included the same holiday and 65,370 cars below the total for the corresponding week in 1919.

Because of the observance of the holiday, reductions were reported in the loading of all commodities, compared with the week before. Loading of coal amounted to 137,432 cars, the lowest for any week since that of July 9, which included the Fourth of July. This also was a reduction of 29,354 cars, compared with the week before. Merchandise and miscellaneous freight, which includes manufactured products, totaled 419,757 cars, 63,424 less than the previous full week.

Loading of live stock totaled 25,866 cars, the lowest number since the week of September 10 and a drop of 8,672 compared with the week before. Grain and grain products amounted to 35,081 cars, 2,374 less than the week before, but 1,773 more than the corresponding week last year. Tabulations showed 43,843 cars loaded with forest products during the week, 6,457 less than the previous week, while coke totaled 6,307 cars, or 180 cars less than the week before.

Ore loadings also were 2,383 below the week before, the total being 5,541 cars.

Except for grain and grain products, the loading of each commodity during the week of November 26 was less than during the corresponding week last year. Total loadings of all commodities by districts were also less compared with the previous week as well as compared with the corresponding week last year.

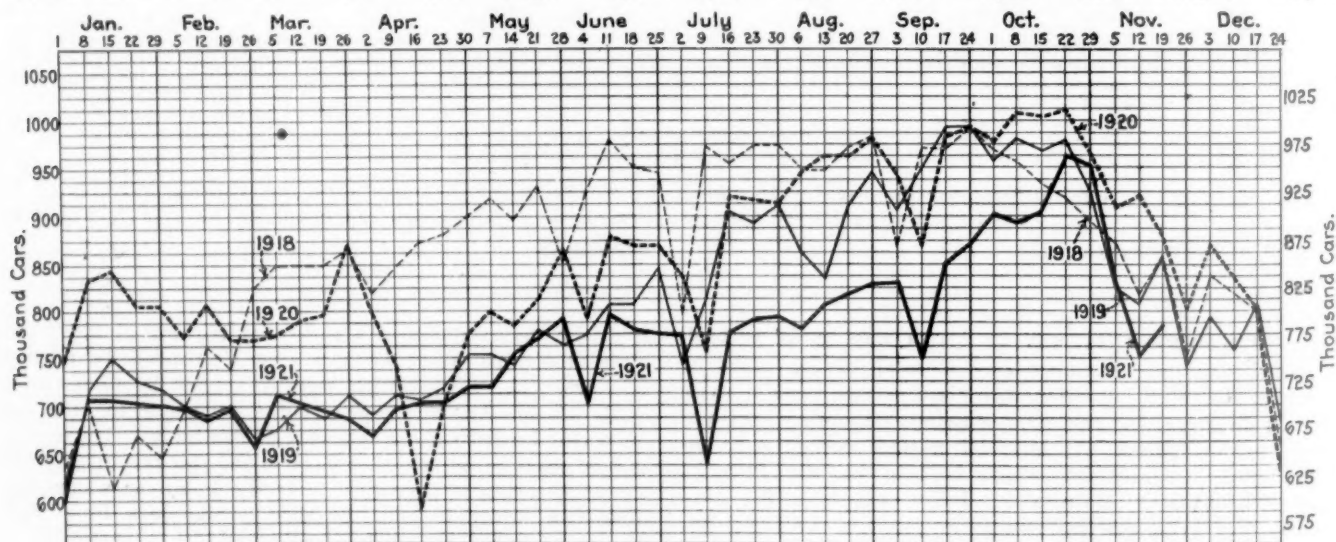
The loading during the week which ended on November 19 totaled 786,671 cars. This was an increase of 33,625 cars over the week before when loadings were reduced by the observance of armistice and election days. The reports show, however, that while the total for the week of November 19 was greater than that for the week before, the average per day was less. Compared with the corresponding week last year, the total for the week of November 19 was a reduction of 102,467 cars, while it was 67,930 cars less than for the corresponding week in 1919.

Loading of merchandise and miscellaneous freight totaled 483,181 cars, which was an increase over the short week before of 16,884 cars. This was, however, 8,070 cars less than were loaded during the corresponding week in 1920. Coal shipments amounted to 166,786 cars, an increase of 14,477 over the previous week, but 49,536 cars less than were loaded during the corresponding week last year.

Loading of grain and grain products totaled 37,455 cars, 3,053 more than during the week before, and 1,702 cars more than during the same week last year. Livestock also showed an increase over the previous week of 269 cars, the

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, NOVEMBER 19, 1921

District:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded		
										This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	9,031	3,952	45,439	1,782	4,325	2,060	63,409	68,929	198,927	.....	.....
	1920	5,586	4,070	56,799	2,522	6,556	5,389	48,081	80,026	.....	209,029	202,480
Allegheny	1921	2,332	3,844	47,965	2,888	2,930	3,018	47,538	53,593	164,108	.....	.....
	1920	2,036	4,133	60,952	6,744	3,234	8,383	39,876	62,648	.....	188,006	178,850
Pocahontas	1921	212	181	20,812	168	1,294	3	5,660	3,166	31,496	.....	.....
	1920	125	176	21,012	969	1,527	211	5,062	3,053	.....	32,185	38,505
Southern	1921	2,959	1,881	21,270	516	16,774	473	37,961	36,280	118,114	.....	.....
	1920	2,578	2,460	31,227	1,226	15,922	2,752	34,542	37,705	.....	128,412	118,133
Northwestern	1921	10,047	9,372	8,826	849	11,460	877	27,213	28,321	96,965	.....	135,304
	1920	11,893	11,034	12,490	1,459	13,695	17,235	27,434	33,519	.....	128,759	135,304
Central Western	1921	9,463	12,348	18,656	149	6,331	715	31,036	37,869	116,567	.....	.....
	1920	9,396	15,756	25,909	555	5,455	3,167	30,735	43,113	.....	134,086	121,857
Southwestern	1921	3,411	2,960	3,818	135	7,186	778	16,049	26,157	60,494	.....	.....
	1920	4,139	2,950	7,933	150	7,545	537	16,824	28,633	.....	68,711	59,472
Total, all roads	1921	37,455	34,538	166,786	6,487	50,300	7,924	228,866	254,315	786,671	.....	.....
	1920	35,753	40,579	216,322	13,625	53,934	37,674	202,554	288,697	.....	889,138	.....
	1919	44,470	46,046	126,794	10,483	59,516	31,663	156,612	379,017	.....	.....	854,601
Week ended:												
November 19	1921	37,455	34,538	166,786	6,487	50,300	7,924	228,866	254,315	786,671	889,138	854,601
November 12	1921	34,402	34,269	152,309	6,450	50,661	8,658	215,439	250,858	753,046	927,586	808,304
November 5	1921	40,921	31,126	172,875	6,739	51,188	10,979	234,770	281,124	829,722	915,615	826,724
October 29	1921	48,949	37,505	207,693	7,339	54,348	18,209	239,656	338,922	952,621	981,242	935,479
October 22	1921	51,001	40,188	212,219	6,647	53,426	23,186	236,640	338,985	962,292	1,008,818	977,051



Revenue Freight Car Loadings for the Past Four Years

total being 34,538 cars, while coke totaled 6,487 cars, a gain of 37 over the week before.

Shipments of forest products amounted to 50,300 cars or 361 less than the week before, and ore totaled 7,924 cars, a decrease of 734 cars within a week. Except for grain and grain products, shipments of all commodities were less during the week of November 19 than during the corresponding week last year.

Compared by districts, increases over the week before were reported from all regions in the loading of all commodities, except the Pocahontas and Southern districts, but all showed decreases, compared with the corresponding week last year.

The summary for the week of November 19 is given in the table on the opposite page.

An item of interest in the comparison of the week of November 19, with the same week a year ago, is the fact that the decrease in the loading of coal, coke and ore, which commodities are particularly vital to the iron and steel trade, accounts for more than 80 per cent of the total decline.

Complete reports for quarter-monthly period ended November 23 indicate a continued increase in the surplus of all classes of cars, the total being 213,523. This is an increase of 73,000 cars as compared with period ended November 15. The bulk of this increase is evenly divided between box and coal cars, there being approximately 35,000 increase in each type with scattering increases in flat, stock and refrigerators.

Shortages reported the past few periods no longer exist, the total for the period ended November 23 being 393 cars.

The Car Service Division has published a chart showing graphically the record of surplus equipment maintained by the railroads during the past 15 years to meet the demands of commerce. While during the periods of maximum demand there was a low average car shortage, the car surplus which the roads have been obliged to maintain during periods of inactivity averages much greater. This represents a sustained unproductive investment of considerable proportions. Certain periods show a surplus, as represented by the solid portion above the base line, and at the same time a shortage, as represented by the shaded portion below the base line. This always occurs at a time of transition between a car surplus and a car shortage period; it is also prevalent to some extent at all times of moderate demand, but disappears when conditions become acute on either side of the line. The cause is the varying requirements for different types of equipment, such as a shortage of coal cars when box cars are not in demand; and varying conditions in different parts of the country, such as a box car shortage in New England and a surplus of box cars in California which, in the nature of things, cannot at once be remedied by the movement of cars from one section to another.

The reports showed 333,616 freight cars in need of repairs on November 15, or 14.4 per cent of the cars on line, as compared with 345,801, or 15 per cent on November 1. This represents a reduction of 11,585 cars.

President Touches on Freight Rates in Message

Suggests Also the Setting Up of Tribunals for Peaceable Settlement of Labor Disputes

WASHINGTON, D. C.

THE President, in his address before a joint session of Congress on December 6, upon the occasion of the opening of the regular session, made no definite recommendations for railroad legislation but he suggested two ideas, which, if followed up, might lead to far-reaching consequences. Following a discussion of the need for an improvement in the condition of the agricultural industry, in which he said the farmer "is justified in rebelling against the transportation cost." President Harding urged attention to the question of a readjustment of freight rates in connection with the general policy of restoring the balance between city and country, saying that the present adjustment has been favoring the basing points. He also urged a further effort toward a solution of the problem of capital and labor, suggesting some plan for the setting up of judicial or quasi-judicial tribunals for the settlement of disputes in order to do away with strikes, lockouts and boycotts. While he outlined no definite plan, the principle which ran through his entire discussion of the subject was the necessity for the regulation and supervision of labor organizations and he said that it may be well to frankly set forth the superior interest of the community as a whole to either the labor group or the capital group. On these two points the President said in part:

"The base of the pyramid of civilization which rests upon the soil is shrinking through the drift of population from farm to city. For a generation we have been expressing more or less concern about this tendency. Economists have warned and statesmen have deplored. We thought for a time that modern conveniences and the more intimate contact would halt the movement, but it has gone steadily on. Perhaps only grim necessity will correct it, but we ought to find a less drastic remedy.

"The existing scheme of adjusting freight rates has been

favoring the basing points, until industries are attracted to some centers and repelled from others. A great volume of uneconomic and wasteful transportation has attended, and the cost increased accordingly. The grain-milling and meat-packing industries afford ample illustration, and the attending concentration is readily apparent. The menaces in concentration are not limited to the retarding influences on agriculture. Manifestly the conditions and terms of railway transportation ought not to be permitted to increase this undesirable tendency. We have a just pride in our great cities, but we shall find a greater pride in the Nation, which has a larger distribution of its population into the country, where comparatively self-sufficient smaller communities may blend agricultural and manufacturing interests in harmonious helpfulness and enhanced good fortune. Such a movement contemplates no destruction of things wrought, of investments made, or wealth involved. It only looks to a general policy of transportation, of distributed industry, and of highway construction, to encourage the spread of our population and restore the proper balance between city and country. The problem may well have your earnest attention.

"It has been perhaps the proudest claim of our American civilization that in dealing with human relationships it has constantly moved toward such justice in distributing the product of human energy that it has improved continuously the economic status of the mass of people. Ours has been a highly productive social organization. On the way up from the elemental stages of society we have eliminated slavery and serfdom and are now far on the way to the elimination of poverty.

"Through the eradication of illiteracy and the diffusion of education mankind has reached a stage where we may fairly say that in the United States equality of opportunity has been attained, though all are not prepared to embrace it.

There is, indeed, a too great divergence between the economic conditions of the most and the least favored classes in the community. But even that divergence has now come to the point where we bracket the very poor and the very rich together as the least fortunate classes. Our efforts may well be directed to improving the status of both.

"While this set of problems is commonly comprehended under the general phrase 'Capital and labor,' it is really vastly broader. It is a question of social and economic organization. Labor has become a large contributor, through its savings, to the stock of capital; while the people who own the largest individual aggregates of capital are themselves often hard and earnest laborers. Very often it is extremely difficult to draw the line of demarcation between the two groups; to determine whether a particular individual is entitled to be set down as laborer or as capitalist. In a very large proportion of cases he is both, and when he is both he is the most useful citizen.

"The right of labor to organize is just as fundamental and necessary as is the right of capital to organize. The right of labor to negotiate, to deal with and solve its particular problems in an organized way, through its chosen agents, is just as essential as is the right of capital to organize, to maintain corporations, to limit the liabilities of stockholders. Indeed, we have come to recognize that the limited liability of the citizen as a member of a labor organization closely parallels the limitation of liability of the citizen as a stockholder in a corporation for profit. Along this line of reasoning we shall make the greatest progress toward solution of our problem of capital and labor.

"In the case of the corporation which enjoys the privilege of limited liability of stockholders, particularly when engaged in the public service, it is recognized that the outside public has a large concern which must be protected; and so we provide regulations, restrictions, and in some cases detailed supervision. Likewise in the case of labor organizations, we might well apply similar and equally well-defined principles of regulation and supervision in order to conserve the public's interests as affected by their operations.

"Just as it is not desirable that a corporation shall be allowed to impose undue exactions upon the public, so it is not desirable that a labor organization shall be permitted to exact unfair terms of employment or subject the public to actual distresses in order to enforce its terms. Finally, just as we are earnestly seeking for procedures whereby to adjust and settle political differences between nations without resort to war, so we may well look about for means to settle the differences between organized capital and organized labor without resort to those forms of warfare which we recognize under the name of strikes, lockouts, boycotts, and the like.

"As we have great bodies of law carefully regulating the organization and operations of industrial and financial corporations, as we have treaties and compacts among nations which look to the settlement of differences without the necessity of conflict in arms, so we might well have plans of conference, of common counsel, of mediation, arbitration, and judicial determination in controversies between labor and capital. To accomplish this would involve the necessity to develop a thoroughgoing code of practice in dealing with such affairs. It might be well to frankly set forth the superior interest of the community as a whole to either the labor group or the capital group. With rights, privileges, immunities, and modes of organization thus carefully defined, it should be possible to set up judicial or quasi judicial tribunals for the consideration and determination of all disputes which menace the public welfare.

"In an industrial society such as ours the strike, the lockout, and the boycott are as much out of place and as disastrous in their results as is war or armed revolution in the domain of politics. The same disposition to reasonableness, to conciliation, to recognition of the other side's point of

view, the same provision of fair and recognized tribunals and processes, ought to make it possible to solve the one set of questions as easily as the other. I believe the solution is possible.

"The consideration of such a policy would necessitate the exercise of care and deliberation in the construction of a code and a charter of elemental rights, dealing with the relations of employer and employee. This foundation in the law, dealing with the modern conditions of social and economic life would hasten the building of the temple of peace in industry which a rejoicing nation would acclaim.

No mention whatever was made of the railroad securities bill which he had asked Congress to pass in a message sent to it in July and which was passed by the House in August but was delayed in the Senate and only taken up for discussion on the floor during the latter part of the extra session.

The failure to mention the railroad bill was not particularly surprising since the President had let it be known before the close of the last session that he had rather lost interest in it because market conditions had improved sufficiently to make it possible to sell more of the equipment trust certificates held by the Railroad Administration in order to provide funds with which to make settlements with the railroads for some time to come. It has also been apparent that the railroads themselves were not sufficiently interested in the passage of the bill with the various conditions that have been put into it, to make any great efforts toward its passage, particularly in view of the danger of having it used as a vehicle for ill-considered amendments to the transportation act. As market conditions improve it may soon become possible for the railroads to finance themselves their indebtedness to the government for additions and betterments made during Federal control and their efforts now are being directed toward effecting settlements with the Railroad Administration.

Senator Cummins had allowed the bill to be displaced as the unfinished business of the Senate before the close of the extra session and the bill for the funding of the foreign loans was made the unfinished business on December 5.

On December 5 the President sent to Congress a special message on the budget, which included a report from the director of the budget estimating the expenditures of the various branches of the government for 1922 and 1923. This estimated the expenditures on account of the Railroad Administration and the transportation act for the fiscal year 1922 at \$337,679,235 as compared with actual expenditures for 1921 of \$730,711,669. No estimate was made for 1923.

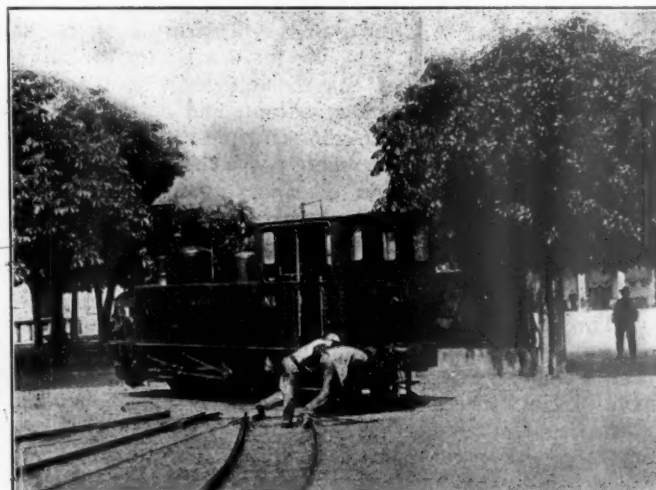


Photo from Ewing Galloway, N. Y.

Turning a Narrow-Gauge Locomotive at Lake Maggiore, Italy

Disastrous Collision on Philadelphia & Reading

Caused by Failure of Train Crew to Obey "31" Order and to Heed Signal Indication

A BUTTING COLLISION of passenger trains on single track on the Newton branch of the Philadelphia & Reading, 16 miles north of Philadelphia, on the morning of December 5, resulted in the death of 25 persons and the injury of 20 or more. The only explanation of the accident which investigation thus far has brought out is, in the language of C. H. Ewing, vice-president of the company, the "failure of the human agency." Specifically—it appears that the train crew of one of the trains disregarded a meet


conjunction with the crew of No. 154, which was waiting on the main line just far enough north of the north end of the siding to allow No. 151 to back into the clear.

The operator had placed the manual block semaphore at stop for No. 151 and in addition had displayed a red flag, which is the practice when there are orders for a train. The conductor of No. 151 accordingly reported to the telegraph office and received an order, a fac-simile of which is shown in an accompanying illustration, directing his train to meet No. 156 at Bryn Athyn and to take the siding. This order was made "complete" at 7:46 a. m. The conductor delivered a copy of the order to the engineman.

As soon as No. 151 had cleared the main line, No. 154

Form 388 **Philadelphia & Reading Railway Company** 3-17-1908 Y

Atlantic City Railroad Co.
Camden & Philadelphia R. R. Co.
The Chester & Delaware River R. R. Co.
The Gettysburg & Harrisburg R. R. Co.
Hagerstown & Pennsylvania R. R. Co.
The Northeast Pennsylvania R. R. Co.
Pottsville Railroad Co.
The Philadelphia & Chester Valley R. R. Co.
The Port Deposit & Pottsville R. R. Co.
Reading & Columbia Railroad Co.
The Reading & Lancaster R. R. Co.
The York & Reading Railroad Co.
The York & Lancaster Railroad & P. R. R. Co.
The York & Reading Railroad Co.

Form 31  **TRAIN ORDER No.** *11* **Date** *Dec 5 1934*

Superintendent's Office *Dec 5 1934*

To *C. E.* *Bryn Athyn*

No 151 At *Bryn Athyn*

X Operator: M.

No 151 will meet No 156
at Bryn Athyn No 151
take siding

N. F. E.

CONDUCTOR AND ENGINEERMAN MUST EACH HAVE A COPY OF THIS ORDER.

Repeated at *745 A*

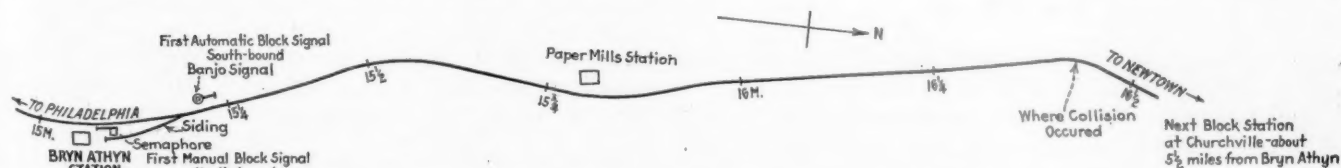
CONDUCTOR TRAIN MADE BY OPERATOR

Evans *No 151* *Complete* *746* *Clayton*

The Order Which Was Disobeyed

order which they had received and, furthermore, the train entered a manual block section the signal for which was set against them.

The two trains involved were No. 151 and No. 156—the former northbound and the latter southbound. No. 151 arrived at Bryn Athyn at 7:42 a. m., 11 minutes behind schedule, and found waiting No. 154, a southbound train



Section of the Newtown Branch in Vicinity of Accident

which it ordinarily meets at Huntingdon Valley, the first station south of Bryn Athyn. The siding at Bryn Athyn, as is shown in the accompanying sketch, can be entered from the north end only. Consequently No. 151 had to proceed past the manual block signal (also shown on the map) under protection of a flag. This protection was provided in



Photo by International

Removing Victims from the Wreckage in the Cut

proceeded southward. The operator at Bryn Athyn at this time was called by Churchville, about 5½ miles north and the first station at which an operator was on duty, asking for the block between the two stations for No. 156, which had received the order to meet No. 151 at Bryn Athyn and was ready to proceed southward. With No. 154 out of the block and No. 151 in the siding, the block was clear and accordingly the operator at Bryn Athyn allowed No. 156 to depart from Churchville, which it did at 7:45.

A minute or so later the operator at Bryn Athyn saw that

No. 151 was leaving and he ran up the track shouting to attract the attention of some of the train crew—but to no avail. No. 151 had left Bryn Athyn disregarding its meet order and also the manual block signal, without the clearing of which no train is, under the rules, permitted to proceed northward. The operator informed the dispatcher of what

had happened and calls for doctors and nurses were immediately sent out.

The trains met head-on about four minutes after No. 151 had left Bryn Athyn. The collision took place on a curve in a rather narrow rock cut which caused the wreckage to pile up instead of scattering over the right-of-way. To this fact the heavy loss of life may be laid. Many victims were imprisoned beneath the mass of wreckage and so perished, who might have been saved if the debris had been scattered.

The cars of both trains were of wood and they soon caught fire. Volunteer rescuers from houses in the neighborhood were not able to do effective work because of the fire and it was with difficulty that fire apparatus was brought from surrounding towns to the scene of the disaster because there are no highways in the immediate vicinity. Before any effective work could be done toward quenching the flames both trains had been practically consumed and with them the unfortunates imprisoned by the wreckage.

A relief train was sent from Philadelphia soon after the accident occurred and the injured were removed to neighboring hospitals as rapidly as possible.

It is understood that the conductor of No. 151 is inclined to admit some degree of responsibility for the accident. The engineman of this train is in the hospital and cannot be questioned. His fireman is among the dead. It appears, however, that the conductor, and possibly also the engineman, failed to give their orders to their subordinates to read as is required by the rules. The engineman and conductor, it is supposed, had in mind train No. 154 which they had met and by some peculiar psychological phenomenon assumed that the meet order referred to No. 154 and

for any unprotected movement into the block. No. 151 had never been admitted to the block and the fact that the signal was, when the train was in the siding, at the rear of the train, offers no excuse whatever to any of the train crew for proceeding without the assurance that it had been cleared by the operator.

Bryn Athyn is at the northern end of automatic block signal territory. On the accompanying sketch an automatic banjo signal, located just north of the north end of the siding to govern southbound movements, marks the northern extremity of automatic signals on this line. North from Bryn Athyn train movements are protected by manual block signals.

The Newtown branch is 19 miles long and is primarily



Photo by International

No. 156 Afire

a suburban passenger line. About ten passenger trains in either direction are operated daily over its rails between Newtown and Philadelphia. Most of the suburban communities it serves are relatively small and travel on the line is not remarkably heavy. As a result the equipment used is rather light and the trains are not as a rule long. For example, No. 156, an express train due to reach Philadelphia at a convenient hour, 8:30, in the morning and which may be presumed, therefore, to be a popular train—had on the day of the accident but five cars, a combination and four coaches. No. 151 had but three cars. All of these eight cars were of wood and the locomotives, No. 161 on Train 151 and No. 278 on Train 156, were relatively light "Mother Hubbards" of the American type and with Wooten fireboxes.

On December 6—the day following the accident—an investigation into the causes of the disaster was begun by the following: C. H. Ewing, vice-president of the company; F. M. Falk, general manager; V. B. Fisher, general superintendent; W. L. Kinter, general solicitor; W. F. Eckert, superintendent, New York division; A. H. Yocum, signal engineer; L. D. Shearer, superintendent of telegraph; B. H. Baker, chief dispatcher; J. T. Pratt, supervisor of safety; J. J. Sellers, train rules examiner; R. J. Steele, supervisor of signals; J. C. Wrenshall, division engineer; N. W. Jones, assistant superintendent; H. A. Rose, of the Pennsylvania Public Service Commission; and Messrs. Temple, Patterson and Hawley, representing the Interstate Commerce Commission. No official report of the results of the investigation have been made public and the details herewith set forth must be taken as preliminary to the official report of the investigators which is not yet complete.



Photo by International

Wreckage Piled in the Narrow Cut Which Made Rescuers' Work Difficult

not to No. 156—in spite of the fact that No. 156 was quite plainly written on the orders delivered to them.

But even with the general misunderstanding or neglect of the order, if any one of the five men composing the crew of No. 151 had paid any attention to the semaphore signal which was kept constantly in the stop position, the collision could have been averted.

This signal, as the map shows, is at the station and No. 151 had to pass the station to back into the siding. This movement was, however, protected by a flag, as was before noted, and no authority was given at any time by the operator for the train to enter the block. Such authority, indicated by clearing the signal, is necessary under the rules

Baltimore & Ohio Shows Much Improvement in 1921

An Analysis of What the Road Is Doing in Operation and Earnings—The 1920 Results

THE MONTHLY REPORT of revenues and expenses of the Baltimore & Ohio for October and the first 10 months of 1921 furnishes a striking contrast with the figures for the preceding year, and particularly with the data given in the recently issued annual report. The net railway operating income for October, \$3,422,497, is considerably in excess of that of any previous month of 1921 and more than \$500,000 greater than the figure for October, 1920. For the first 10 months of 1921 the road had a net railway operating income of \$18,693,694. In the first 10 months of 1920 the property experienced a deficit of \$5,661,523. The figure, therefore, represents an improvement of \$24,355,217. This improvement is in part due to the adjustment

that we did not already know about the operations of the property during that eventful year. There are some things in the report, however, that are shown in such a striking way as to demand special attention. For one thing, the report brings out the fact that in the 12 months of 1920, the road handled 101,924,520 tons of revenue freight. This compared with 88,862,248 tons in 1919 and represented an increase of 14.7 per cent over that year. The ton-miles of revenue freight totaled 20,932,667,112, which broke all previous records for the Baltimore & Ohio. It was 15.3 per cent greater than the best previous year in the company's history. This seems to justify amply the statements made by the officers that the road regained more rapidly than



The Baltimore & Ohio

that was made in rates and charges in August, 1920, in part to economizing in maintenance, and in part to improved operating conditions generally. The Baltimore & Ohio in 1920 handled the largest business in its history. At the present time its net ton-miles are averaging but two-thirds those of last year. The latest figures available at this writing are those for September. Up to the end of that month,

was anticipated much of the traffic which, under federal control and as a necessary war measure, was diverted to keep the strategically located eastern lines open for the movement of fuel, steel and munitions to the seaboard. This last accounted in large part for the relatively poor showing in net income during federal control.

Although 1920 was a record year from the standpoint of

BALTIMORE & OHIO OPERATING RESULTS, 1914 TO 1920

Year ended	Mileage	Freight revenue	Gross revenue	Operating expenses	Operating ratio	Net operating revenue	Revenue tons	Revenue tons one mile	Average haul	Average train load
June 30										
1914	4,515	\$76,398,717	\$99,164,010	\$74,403,389	75.03	\$24,760,621	72,267,060	14,054,421,501	194	645
1915	4,535	70,780,809	91,815,797	63,925,508	69.62	27,890,290	64,375,595	12,970,894,074	201	692
1916	4,539	88,476,032	111,668,680	79,319,804	71.03	32,348,876	80,785,993	15,793,944,856	195	761
Dec. 31										
1916	4,712	95,596,677	121,793,842	87,780,154	72.07	34,013,688	87,785,876	17,004,703,831	194	760
1917	4,989	107,174,612	139,851,910	108,093,666	77.29	31,758,244	93,516,882	18,144,817,428	194	785
1918	5,152	129,877,038	175,259,575	161,933,591	92.40	13,325,984	95,346,229	17,032,281,066	179	815
1919	5,154	136,802,852	182,620,016	170,348,032	93.28	12,271,984	88,862,248	17,203,592,303	194	847
1920	5,155	182,710,629	231,944,443	226,399,308	97.61	5,545,135	101,924,520	20,932,667,112	205	873

the road had handled since January 1, 11,062,904,000 net ton-miles. In the first nine months of 1920, the net ton-miles aggregated 16,095,181,000. The increase in net, therefore, is the more remarkable because it has taken place in spite of this falling off in traffic and in spite of the resulting sharp decrease in gross income.

Record-Breaking Business in 1920. The annual report of the Baltimore & Ohio which was given to the annual meeting at Baltimore on November 21, does not tell us much

the traffic carried, increased costs of operation without corresponding increase in rates and charges prevented the Baltimore & Ohio from realizing on its record breaking business. Its operating ratio was 97.61. For the year the road had a net railway operating deficit of \$4,427,019. The corporate income account, however, which takes into consideration the standard return for the first two months and the guarantee for the following six months and the earned income for the remaining four months, showed a

gross corporate income of \$31,834,154. The interest on funded debt and other deductions amounted to \$24,588,480. Dividends of 4 per cent on the preferred stock amounted to \$2,354,531 and the surplus after allowance for dividends was \$4,890,950. No dividends on the common stock were paid in 1920.

Interesting Comparative Figures of Equipment Maintenance Costs. A noteworthy feature of the Baltimore & Ohio's annual report is the comparative figures which are given for the years 1911 to 1920. A perusal of the several tables showing these figures brings out details which explain strikingly the reason for the net railway operating deficit which the road experienced in 1920. The tables develop the interesting fact that the wages of engine crews in 1913 averaged \$10.88 per 100 locomotive-miles. In 1919 they averaged \$18.70 and in 1920, \$24.43. Fuel per 100 locomotive-miles in 1913 was \$9.58; in 1919 it was \$22.96 and in 1920, \$36.81. The total cost per 100 locomotive-miles in 1913 was \$36.66; in 1919 it was \$100.78 and in 1920, \$122.98.

Another table shows the costs of repairs to cars, the statement including the repairs, retirements and depreciation charged to operating expenses. The average cost per freight car in 1913 was \$87.97; in 1919 it was \$212.97 and in 1920, \$287.55. The same figures for passenger cars

in a safe condition and is in adequate shape to handle properly all the business it has been called upon to carry; nevertheless, all has not been done that the officers of the road would like to have seen done.

Some Maintenance of Way Statistics

It may be of interest to put some of these details in the form of statistics. The road will probably lay this year new rail amounting to about 28,000 tons. In 1920 it put in track 53,638 tons; in 1919, 28,262 tons; in 1916 and 1917, about 75,000 tons. New ties put in track in 1921 will total about 2,350,000. In 1920 the total was slightly in excess of this, the actual figure for 1920 being 2,576,398. The amount of rock ballast put in track this year is counted on reaching 275,000 yards. In 1920 the figure was 216,000. The average for the years 1908 to 1917 was 490,000. Gravel ballast used this year will total approximately 340,000 yards; in 1920 it was 425,000. Slag and cinder ballast this year is figured at 190,000; in 1920 it was 438,000.

Orders for 3,000 New Car Bodies. The best index of maintenance, insofar as cars are concerned, is the percentage of bad order freight cars. The Baltimore & Ohio on November 15 had 13.3 per cent of its freight cars in bad order. The percentage for all roads on that date was 14.4

		LOCOMOTIVES				CARS			
		Cost per 100 miles run				Repairs, retirements and depreciation charged to operating expenses			
						Freight			
						Passenger			
Year ended	Miles run	Repairs, retirements, and depreciation	Wages of engine men and firemen	Cost of fuel for locomotives	Total*	Average number of freight cars owned	Amount	Average per car	Average per car
June 30									
1911	64,708,403	\$10.08	\$9.58	\$8.73	\$31.75	89,522	\$7,061,035	\$78.87	\$763.48
1912	61,119,637	11.15	10.09	8.48	33.20	88,131	7,566,655	85.86	785.01
1913	64,242,709	12.36	10.88	9.58	36.66	89,701	7,890,822	87.97	797.32
1914	61,445,747	12.11	11.67	10.27	38.37	98,064	7,106,659	80.70	653.80
1915	55,823,874	12.98	10.61	9.63	37.48	86,097	6,269,173	72.82	619.10
1916	62,581,009	17.07	10.44	9.31	40.85	84,943	9,646,292	113.56	809.74
Dec. 31									
1916	67,399,322	16.69	10.67	10.32	42.07	89,795	9,332,072	103.93	890.39
1917	69,829,296	20.38	13.24	20.15	59.74	94,217	8,849,531	93.93	912.11
1918	65,243,727	41.55	17.63	25.54	95.09	97,334	15,984,382	163.19	1,456.24
1919	59,960,676	47.45	18.70	22.96	100.78	95,422	20,321,911	212.97	1,994.07
1920	67,371,623	47.41	24.43	36.81	122.98	95,867	27,566,870	287.55	2,504.56

*Includes also enginehouse expenses, cost of operating fuel stations, water for locomotives and lubricants and other supplies for locomotives.

show an increase from \$797.32 per car in 1913 to \$2,504.56 in 1920. A selection from these figures has been made up in the form of a table. The striking increases in costs reflect the changes which have come about through the inflation of labor and material during and incident to the war.

Maintenance Savings in 1921. As between 1920 and that part of 1921 for which the returns are available, the Baltimore & Ohio has seen a striking change. While influenced somewhat by the lesser amount of traffic handled and also by the reductions in wages, improvement in morale and changes in working conditions, there can be no question but that a large portion of the savings in expenses in 1921, as compared with 1920, has been due to reduced maintenance. The situation has been aptly described by a Baltimore & Ohio officer who explained that the condition was a great deal like that of the owner of a house whose bank balance had been seriously reduced but who desired nevertheless to repaper his living room and was confronted at the same time with the necessity of repairing a leak in the roof. Naturally, under the conditions, he would repair the roof and presumably postpone the papering of the living room. This, the officer said, is what has happened with the Baltimore & Ohio. The road-bed has been maintained to a high standard, but customary painting, etc., has been omitted. A trip over its main line evidences that it looks good and rides well. It is certainly

per cent. Bad order box cars on the B. & O. on the date mentioned totaled 12 per cent and coal cars 13.9 per cent. There are at present stored along the lines of the road large numbers of cars requiring heavy repairs, although this perhaps is not on the whole exceptional as compared with other roads. However, the road is taking heroic measures to remedy the situation. Early in October, as reported in the Equipment and Supplies column of the *Railway Age* of October 8, it placed orders for 1,000 box and 1,000 hopper car bodies; it was reported in the issue of December 2 as having placed orders for 1,000 additional hopper car bodies. The intention is to use rebuilt trucks and the running gear and replace the bodies; at any rate, the steps taken will permit the elimination of 3,000 heavy bad orders from the bad order total.

B. & O. Primarily a Coal Road

Coal Traffic Falls Off. In the editorial review of the Baltimore & Ohio's annual report for 1919 which appeared in the *Railway Age* of January 21, 1921, page 224, considerable attention was paid to the manner in which the road handled its coal traffic, to the fields from which the coal is obtained, and the way in which it is moved. Similarly, comments were made concerning the growing traffic in other commodities. It was noted, however, that, "Nevertheless, despite the increase in general business, the Baltimore &

Ohio is still primarily a coal road." This statement applies with equal force to the 1920 annual report. In 1918 the Baltimore & Ohio carried 45,259,560 tons of bituminous coal, this constituting 47 per cent of the total tonnage; in 1919 the tonnage of bituminous coal was 40,752,924 or 45.86 per cent; in 1920 the bituminous coal moved reached 48,933,438 tons or 48 per cent. The increase in total tons of all commodities handled in 1920 over 1919 was 13,062,272; of bituminous coal 8,180,514.

The Baltimore & Ohio, as was noted in the editorial review above mentioned, moves its coal to tidewater at Baltimore. With one exception—the Pennsylvania System—it moves more coal to the lakes than any other carrier. There is also a heavy movement to central Pennsylvania, New York and New England over the Philadelphia & Reading through Shippensburg, Pa., which coal is delivered to that carrier by the Western Maryland and the Cumberland Valley. The movement to the coal piers at Baltimore this year has fallen off in a rather unusual degree, due largely to the difficulties which have beset the country's export trade in coal. In 1920 the B. & O. broke all records for dumpings at its Baltimore piers—Curtis Bay and Locust Point. Whereas in 1918 it dumped at these piers 2,400,000 tons, and in 1919 about 2,000,000 tons, in 1920 it reached a figure of 5,500,000 tons. For purposes of comparison it may be noted that in 1920 the Chesapeake & Ohio dumped at Newport News, Va., about 7,000,000 tons; the Virginian at Sewalls Point (Norfolk), about 5,500,000 tons and the Norfolk & Western at Lamberts Point (Norfolk), about 8,800,000 tons. This year, however, the B. & O. will dump at Baltimore but 2,200,000 tons. As has been the case at many other piers the pooling arrangements at Curtis Bay have been abandoned.

The Baltimore & Ohio dumps coal at the lakes at Toledo and Lorain, and will resume the handling of coal at Fairport, where it formerly handled considerable quantities also at Fairport. In the first 10 months of 1921 it has loaded bituminous coal into vessels at Toledo amounting to about 2,400,000 tons as compared with 1,400,000 tons in the same period of 1920 or 2,100,000 in 1919. For Lorain the figures for the first 10 months of 1921 show 2,500,000 tons as against 2,900,000 in the first 10 months of 1920, or 2,800,000 in the same period of 1919. The lake movement seems to have held up considerably better than the movement to tidewater at Baltimore.

Back Haul on Iron Ore. The Baltimore & Ohio has the advantage of a sizeable back haul on iron ore from its lake ports. It ranks fourth in this traffic, its business being exceeded by that of the Bessemer & Lake Erie, the Pennsylvania and the New York Central. Naturally, in view of the state of the steel industry, this business has been considerably less than it was in 1920. In the first nine months of 1921 the road handled from the lake ports about 1,500,000 tons as compared with 2,800,000 tons in the same period of 1920. Ore is received at Lorain, Toledo, Fairport and Cleveland. Last year the tonnage shipped from the first three was practically equal—about 900,000 tons. This year about two-thirds of the business has been handled from Fairport.

Attitude of Officers and Men Seems Excellent

Conclusions. It is fairly well understood that the Baltimore & Ohio has experienced rather rough going during the past three or four years. It has been handicapped by the manner in which its lines were divided during federal control under the jurisdiction of six federal managers reporting to four regional directors and by the diversion of much of its traffic, particularly its high grade freight traffic and passenger business, to other roads. While the officers of the road, themselves, do not believe that the system has

regained all the ground lost during federal control, the 1920 annual report states: "In the ten months of the year (1920) during which the road was operated under the jurisdiction of the company, the pre-war basis for maintenance of way and structures was re-established, and some improvement made in track and equipment conditions"; that the through passenger train service was re-established, and the general ability of the road reflected in the fact that the Baltimore & Ohio "during the year 1920 moved a larger volume of traffic * * * than ever before in its history."

The general attitude of officers and men seems excellent. The substantial increase in net railway operating income, notwithstanding the falling off in business which has characterized the present year, seems to indicate that the Baltimore & Ohio has turned the corner and should continue the improvement which has already been developed.

Senate Committee Hearings

WASHINGTON, D. C.

TESTIMONY on behalf of the railroad train service brotherhoods by Frank J. Warne was concluded on December 3, after Mr. Warne had been on the stand for 10 days. This testimony was given in connection with the committee's general investigation of railroad conditions in accordance with a Senate resolution. In the same proceeding the committee expected to hear testimony of Walker D. Hines, former director general of railroads, on Friday of this week. Mr. McAdoo is to be called later. Commissioner Campbell of the Interstate Commerce Commission is also to be heard by the committee at the request of Senator Poindexter, and Chairman Cummins asked the Interstate Commerce Commission whether it cared to introduce testimony. It is understood that Commissioner Hall will appear for the commission some day next week.

Hearings on the Capper bill and other proposed amendments to the transportation act have not yet been concluded and it is expected that additional witnesses will be heard on behalf of the railroads. After hearing the testimony of the state railroad commissions and of Clifford Thorne and S. H. Cowan, the committee appeared anxious to conclude the hearings and act on a bill, but the testimony presented on behalf of the railroads and Security Owners' Association has apparently counteracted to some extent the effect of the previous testimony and indicated to the committee that it had heard a one-sided story. Representatives for the railroads insisted on having an adequate time to present their case in spite of the efforts of Senator Cummins to conclude the hearings and this made it necessary to postpone action until the new session.

Warne claimed that the case of the public interest in the country's transportation highways has not been properly presented before most tribunals in valuation and other cases. "One can even go further, with due regard to the facts in the case," he said, "and state without fear of successful contradiction that much of the public interest in the railroads has been automatically and arbitrarily capitalized by the financial interests in control of the roads for the benefit of private groups and individuals. 'These now exercise 'squatter' sovereignty over vast amounts of value belonging to the people and which were never surrendered by them. In brief, the greater part of the interest of the public in the railroads, which was retained by it even in the charter grants to the roads, has been taken from it by various methods and devices of economic exploitation and is today 'legalized' as private property. And a considerable part of this public interest is represented in the present-day land values in road and equipment of the railway property investment account."

The witness discussed the important part investments in

the roads made out of earnings and surplus play in the property investment account at the present time. He argued that the public had an interest in such sums and that it should not be required to pay an additional return on these invested surplus earnings. In this connection he claimed that the total cost of the Pennsylvania terminal and tunnel in New York City of \$114,000,000 contained \$57,000,000 of such surplus earnings. Illustrations were also given from the practices of the Chicago & Alton, the Burlington, the Delaware, Lackawanna & Western, and numerous other carriers.

Replying to testimony presented before the committee by witnesses for the railroads as to the proportion of operating revenues that goes to labor in the form of wages to employees. Warne said that the total amount of the government rental under the guarantee, amounting to as much as \$906,500,000, was omitted from the calculation for the years 1918, 1919, and 1920. He also said that as much as \$92,000,000, representing salaries to general and division officers, was included as wages to employees, so that the ratio to labor was made very much larger by each one of these two "statistical fallacies." He said:

"The amount received by the American railroads as representing return on investment was \$788,633,049 in 1920 and not \$61,928,626 as reported by Mr. Elliott and other representatives of the railroads. It was \$906,524,492 in each of the years 1919 and 1918 and not \$454,984,953 and \$638,568,603, respectively, as stated by Mr. Elliott.

"Mr. Elliott's figures give the proportion going to investment in 1920 as 1.0 cent out of each dollar. The inclusion of the amount of the standard return increases this more than eleven-fold—to 11.4 cents. For 1919 investment received 16.2 cents out of every dollar instead of Mr. Elliott's 8.8 cents, and in 1918 the amount going to investment out of each dollar was 17.6 and not 13.1 cents.

"The 11.4 cents out of every dollar that in 1920 went to investment, a relatively low return compared with 1919 and 1918 because of much greater maintenance expenditures in 1920 out of revenue, is equal to 105,528,216 more dollars than the 23.8 cents out of every dollar in 1915; it is \$127,614,902 more than the 21.8 cents going to investment in 1914; it is even greater in total amount by \$80,148,666 than the 25.2 cents received by investment in 1912.

"The 16.2 cents in 1919 and 17.6 in 1918 received by investment out of every dollar are \$223,419,659 more than the 23.8 cents in 1915. They are \$245,506,345 more than the 21.8 cents in 1914; \$198,040,109 more than the 25.2 cents in 1912. They are only \$78,348,467 less than the 29.1 cents in 1916, this latter standing for the largest proportion out of each dollar received by investment in any one of these years from 1912 to 1920.

"With labor receiving 53.6 cents out of every dollar in 1920, the largest proportion in any one of these nine years, there went to investment a much larger sum, not taking into consideration the large income to capital through excessive maintenance, than in either 1915, when labor received only 41.5 cents, or in 1914, when it was paid 44.1 cents, or in 1912, when the proportion of each dollar was 43.1 cents.

"It should be plain from all this that an increase in the proportion that goes to labor out of each dollar earned is not inconsistent with even large revenue to investment. It is also clear that the proportion that goes to capital out of each dollar earned may decrease in any one year in relation to another year and at the same time investment receive a much larger return. This usually comes about through the smaller proportion being received on a great many more dollars."

Mr. Warne said that railroad corporations today own as much as \$2,760,000,000, face value, of the stocks of other railroad and affiliated companies and \$2,453,000,000, face value, of their bonds, the total investment of railway corporations in the securities of other rail transportation and affili-

ated companies exceeding \$5,213,000,000, or approximately one-fourth—25 per cent—of total railway securities.

"This ownership of stock should not be regarded from the purely investment standpoint," he said, "that is, as the investment of capital upon which a stated or specified rate of return should be secured. This is true because of the fact that such ownership has no relation to and is not based upon the principle of investment that prevails in ordinary circumstances. The conclusion is indisputable that railway corporations do not purchase railway stock widely for purpose of investment, but that the holdings in the stock of other railways are rather for the purpose of controlling or influencing the management of corporations whose operations are of real concern to the holding company. Such holdings are either majority holdings, which ensure control, or minority holdings of sufficient amount to guarantee an effective influence in management."

Among the conclusions which the witness drew from his presentation of a large number of specific illustrations of different railroads as to this intercorporate ownership are the following:

- Inflation of the property investment account.
- Over-capitalization, involving the excessive issue of securities.
- Over-expansion of credit.
- Corporate speculation and speculation with corporate funds.
- Centralization or concentration of financial power.
- "Reckless and profligate" financiering.
- Complex, complicated, intricate, secret, and confusing intercorporate relations and bookkeeping.
- Manipulation of accounts and falsification of records.
- "Circuitous and subterranean" transactions between corporations within the same system.
- Control of a company or of companies by a single corporation stockholder over against the interest possibly of thousands of individual stockholders.
- Minority stock control of transportation companies.
- Removal of control from close relations to the subsidiary's public.
- Creation of holding companies that deny the authority of the Interstate Commerce Commission.
- Diversion from investment in equipment and other property of holding corporations of vast sums tied up in stock purchases.
- Diversion of funds for needed improvements in the subsidiary to channels serving more the interest of the holding company.
- Neglect of necessary improvements to the subsidiary road in order to pay dividends to the holding corporation.
- Impairment of credit of the subsidiary.
- Destruction or deterioration of stock value to minority stockholders.
- Reduction or passing of dividends to the subsidiary stockholders.
- Replacement of a conservative by a speculative management; of one practicing rigid economy by one engaging in extravagance.
- Cash dividends, bonuses, gifts of securities in subsidiary companies, syndicate profits and commissions, stock dividends, and the like.
- Unfair and unjust division of through rates.
- Unfair and unjust distribution of traffic.
- Limitation of necessary new construction.
- Encouragement to dummy directors and dummy officials and even dummy stockholders and dummy corporations.
- Contracts presumably between two or more subsidiary companies made in fact by one and the same holding company.
- The relation of holding and subsidiary companies and their officials to construction and supply companies.

General News Department

The Illinois Central is experimenting with peat as a substitute for coal as fuel on its Chicago suburban trains.

Demurrage on freight cars, in Canada, according to a ruling recently handed down by the Railway Commission, is hereafter to be one dollar a day on each car, after the first 48 hours, and five dollars a day thereafter.

The division terminal of the Nashville, Chattanooga & St. Louis, now located at Lexington, Tenn., will be moved to Hollow Rock Junction, Tenn., on January 1, where new yards have been constructed at a cost of approximately \$500,000.

George J. Ray, chief engineer of the Delaware, Lackawanna & Western, will address the Western Society of Engineers, Chicago, on the evening of December 15, on "Economic Considerations of Line Revisions on the D. L. & W."

The Interstate Commerce Commission has announced a series of hearings in valuation cases to be held at Washington during January, including the Elgin, Joliet & Eastern and the Atlanta, Birmingham & Atlantic on January 9; Evansville & Indianapolis on January 16, Central of Georgia and Florida East Coast on January 23.

A million dollars a month, approximately, is the amount of the war taxes which the New York Central during the past four years has been collecting on passenger tickets and freight bills, and a circular has been issued telling the company's patrons how they are now going to save twelve millions a year. When the tax is taken off, January 1, the fare from New York to San Francisco will drop from \$120.59 to \$111.70.

New England Railroad Club

C. B. Smith, mechanical engineer of the Boston & Maine, will speak on the subject of Rebuilding Old Locomotives at the next meeting of the New England Railroad Club, to be held on Tuesday, December 13. A dinner will precede the regular business meeting, which will be held at the American House, Boston, Mass., at 8 p. m.

North Dakota Campaign Against Crossing Accidents

The Board of Railroad Commissioners of the state of North Dakota proposes to launch immediately a state-wide campaign for the reduction of grade crossing accidents. This is believed to be the first instance of a state department undertaking on its own account an extensive campaign against such accidents.

Recommends Another Claim Prevention Congress

The Freight Claim Division of the American Railway Association has issued a circular to all roads recommending that another "Freight Claim Prevention Congress," be held in Chicago during the month of January, 1922, and to be somewhat similar to the one held in Chicago in November, 1920.

"Labor" Contributes Some Additional Strike News

Labor, the newspaper published by the Plumb Plan League, reproduces in its latest issue a copy of an order said to have been sent by the Navy Department to all heads of departments and barracks petty officers under date of October 21, directing them to interview all men who come under their jurisdiction, with a view of finding out if any had previous experience in railroading; and to prepare lists showing the previous experience, such as fireman, engineer, trackman, switchman, round house and repair man, or in any duties in connection with railroad operation of all men assigned to each barracks or head of department.

The order also asked for a list of those who had had experience in machine gun crews and were good pistol or rifle shots. The lists were to be submitted to the executive officers on October 24.

The paper draws from this the inference that the government had made extensive plans for resisting the strike of railroad employees which was called for October 30.

Chicago Engineers to Study Railroad Economics

The Chicago chapter of the American Association of Engineers has established courses of instruction in railroad management and in railroad economics. These courses are open to the members of this association without charge. They are not designed to make operating officers or accountants of the students, but are intended to give them an insight into the methods employed in these departments. It is the intention to direct the work of these courses by reference as far as possible to the methods in vogue on the roads on which the students are employed.

Board Summons Carriers in Contract Controversy

Representatives of nine railroads—the Erie, the Pittsburgh & Lake Erie, the Indiana Harbor Belt, the St. Louis-San Francisco, the Gulf Coast Lines, the Chicago Great Western, the Colorado & Southern, the Chicago, Milwaukee & St. Paul and the Great Northern have been summoned to appear before the Labor Board on December 19 in controversies arising over the action of these carriers in leasing their shops or maintenance of way work to outside companies. The disputes in each case have been brought by the employees involved as constituting a violation of the labor provisions of the Transportation Act. It has long been an open question as to the attitude of the Labor Board on this subject and its action will therefore be given careful attention not only by those roads which have already engaged in this practice but by representatives of other carriers which have been contemplating such action but have hesitated because of the unknown attitude of the Board.

All of the cases now before the Board, 70 in number, involving the American Express Company, are to be disposed of by hearings which will begin on December 12 and continue until testimony in all of the cases has been completed. This is part of the Board's attempt to clear its docket of a large number of minor cases which were submitted to it because of the lack of adjustment boards.

Coal in Store November 1

The Bureau of the Census and the Geological Survey have made a joint investigation of the stocks of anthracite and bituminous coal in the country as of November 1, which shows total consumers' stocks on that date amounting to approximately 47,000,000 tons. This quantity was about 25 per cent below the maximum reached during the war. Because of the business depression, the report says, the stocks on hand appear larger than they are and at the present low rate of consumption if evenly divided among all users they would last about 43 days. With business active they would last 35 days. The present stocks are about the same as those on January 1, 1921. During the spring and summer stocks declined to 39,000,000 tons, but they increased rapidly in October because consumers feared a possible railroad strike. Now that the strike has been averted, production has fallen sharply to a point below consumption and coal is being withdrawn from storage.

The report estimates that the railroads had on hand as of November 1 29 days' supply of bituminous coal, which is a larger amount than they have had since January 1, 1919, when there was a 32 days' supply. This estimate is based on preliminary returns from 255 roads furnished by the American Railway Association.

I. C. C. Questions Interlocking Directors

The Interstate Commerce Commission has sent out a questionnaire to directors and officers of railroads that occupy such positions on more than one road, calling for information which the commission desires to have in passing upon their applications for authority to retain such positions after December 31. A large number of such applications under Paragraph 12 of Section 20-a of the law are being filed with the commission daily. So far the commission has passed on a number of simple cases in which the dual positions are held with purely subsidiary or affiliate companies. The questionnaire asks for information as to the following:

- 1.—Personal ability of person;
- 2.—Extent of financial interest in road;
- 3.—Affiliation if any with banks or banking institutions, railroad equipment concerns; supply houses, coal companies, real estate concerns or others doing business with railroads generally;
- 4.—Interest in commodities transported by railroad carriers;
- 5.—Number and importance of boards of which a member;
- 6.—Extent of actual or potential competition between carriers involved.

Net Operating Income for October 5.4 Per Cent

Reports of the earnings of the Class I railroads for the month of October just filed with the Interstate Commerce Commission show a net operating income of \$105,186,283, which is at the rate of 5.4 per cent for a year on their tentative valuation. This is the largest net operating income the roads have had for a month since the rates were increased and is 21.8 per cent greater than that for October, 1920, which was the best month they have had heretofore since the rate decision. The compilation is based on reports from 199 roads. The Detroit, Toledo & Ironton and the Kansas City Terminal have not yet filed their reports. October is normally the heaviest traffic month of the year and, due to the

per cent and the Western roads 5.8 per cent, in each case showing an improvement as compared with last year.

For the 10 months of 1921 ended October 31, the net operating income of the Class I roads has been \$494,606,000, which is at an annual rate of return of 3.2 per cent. Operating revenues for the 10 months show a decrease of 8.1 per cent and operated expenses show a decrease of 17.1 per cent. That this was accomplished to a considerable extent at the expense of maintenance is shown by the fact that the maintenance expenses decreased 21.7 per cent. Thirty railroads had operating deficits in October as compared with 36 in September, 13 being in the Eastern, 7 in the Southern and 10 in the Western district. The table below giving a preliminary report for October and the 10 months has been compiled by the Bureau of Railway Economics.

A. R. E. A. Nominees

The Nominating Committee of the American Railway Engineering Association has submitted its report to the Board of Direction as follows: For president, J. L. Campbell, chief engineer, El Paso & Southwestern, El Paso, Texas; for second vice-president, G. J. Ray, chief engineer, Delaware, Lackawanna & Western, Hoboken, N. J.; for directors (three to be elected), D. J. Brumley, chief engineer, Chicago Terminal Improvements, Illinois Central Railroad, Chicago; Maurice Coburn, engineer maintenance of way, Pennsylvania System, Indianapolis, Ind.; H. T. Douglas, Jr., chief engineer, Chicago & Alton, Chicago; F. W. Green, vice-president, St. Louis Southwestern, St. Louis, Mo.; C. E. Lindsay, special engineer, New York Central Lines, Albany, N. Y.; J. C. Mock, signal-electrical engineer, Michigan Central, Detroit, Mich.; H. L. Ripley, valuation engineer, New York, New Haven & Hartford, Boston, Mass.; O. E. Selby, principal assistant engineer, Cleveland, Cincinnati, Chicago & St. Louis, Cincinnati, Ohio, and W. P. Wiltsee, principal assistant engineer, Nor-

PRELIMINARY REPORT OF REVENUES AND EXPENSES, CLASS I ROADS AND LARGE SWITCHING AND TERMINAL COMPANIES

Item	Month of October			Ten months' period ended October 31		
	1921	1920	Per cent of increase	1921	1920	Per cent of increase
Total Operating Revenues:						
Eastern District (incl. Poca. Reg.)	\$246,362,769	\$314,585,441	d 21.7	\$2,246,399,989	\$2,416,509,430	d 7.0
Southern District (excl. Poca. Reg.)	64,279,732	71,068,251	d 9.6	573,108,304	631,795,903	d 9.3
Western District	224,492,625	256,012,830	d 12.3	1,851,803,938	2,033,060,895	d 8.9
Total—United States	535,135,126	641,666,522	d 16.6	4,671,312,231	5,081,366,228	d 8.1
Total Maintenance Expenses:						
Eastern District (incl. Poca. Reg.)	89,850,859	115,313,235	d 22.1	840,678,372	1,074,490,062	d 21.8
Southern District (excl. Poca. Reg.)	23,435,063	27,382,123	d 14.4	221,175,127	265,208,743	d 16.6
Western District	71,194,138	88,225,322	d 19.3	646,716,959	841,863,603	d 23.2
Total—United States	184,480,060	230,920,680	d 20.1	1,708,570,458	2,181,562,408	d 21.7
Total Operating Expenses:						
Eastern District (incl. Poca. Reg.)	191,786,345	266,357,947	d 28.0	1,906,541,969	2,404,428,403	d 20.7
Southern District (excl. Poca. Reg.)	50,205,615	62,295,350	d 19.4	501,897,543	589,097,644	d 14.8
Western District	155,122,817	197,740,434	d 21.6	1,470,881,318	1,808,324,071	d 18.7
Total—United States	397,114,777	526,393,731	d 24.6	3,979,320,830	4,801,850,118	d 17.1
Net Railway Operating Income:						
Eastern District (incl. Poca. Reg.)	40,734,848	33,860,110	20.3	207,885,159	Def. 107,671,519	.....
Southern District (excl. Poca. Reg.)	10,467,353	6,528,412	60.3	39,586,707	17,279,151	129.1
Western District	53,984,082	46,003,851	17.3	247,134,399	94,681,447	161.0
Total—United States	105,186,283	86,392,373	21.8	494,606,265	4,289,079	.....
Rate Earned—Annual Basis:						
Eastern District (incl. Poca. Reg.)	5.0	4.2	.....	3.0	Def.	.....
Southern District (excl. Poca. Reg.)	5.3	3.4	.....	2.2	1.0	.....
Western District	5.8	5.1	.....	3.7	1.5	.....
Total—United States	5.4	4.6	.....	3.2	.....	.....

*Less than one-tenth of one per cent. d Denotes decrease.

Note—Excludes returns for Detroit, Toledo & Ironton and Kansas City Terminal not yet filed.

threat of a railroad strike, the volume of freight for the latter part of the month was beyond normal. Immediately after the strike threat was removed, carloadings fell off more than 122,000 in a single week and have since been declining at a rate which would indicate that the traffic for November will probably approximate only about 80 per cent of that for October. The ton miles of freight handled in October were approximately 36,000,000,000, a decrease of 14 per cent as compared with October, 1920. This was lower than the ton mileage for any October since 1916. The total operating revenues for the month were \$535,135,126, a decrease of 16.6 per cent as compared with October, 1920, while the operating expenses were \$397,114,777, a decrease of 24.6 per cent. The maintenance expenses were \$184,480,060, a decrease of only 20.1 per cent as compared with last year. The operating ratio this year was 74.2 per cent as compared with 82 per cent last year. Railroads of the Eastern district showed a net return at the rate of 5 per cent, the Southern roads 5.3

folk & Western, Roanoke, Va. For members of nominating committee (five to be elected), W. J. Backes, engineer maintenance of way, New York, New Haven & Hartford, New Haven, Conn.; A. M. Burt, assistant to vice-president in charge of operation, Northern Pacific, St. Paul, Minn.; J. V. Hanna, chief engineer, Kansas City Terminal, Kansas City, Mo.; Maro Johnson, assistant engineer, Illinois Central, Chicago, Ill.; H. K. Lowry, signal engineer, Chicago, Rock Island & Pacific, Chicago; J. de N. Macomb, office engineer, Atchison, Topeka & Santa Fe, Chicago; A. Montzheimer, chief engineer, Elgin, Joliet & Eastern, Joliet, Ill.; W. L. Morse, special assistant engineer, New York Central, New York; P. B. Motley, engineer of bridges, Canadian Pacific, Montreal, Can., and A. O. Ridgway, assistant chief engineer, Denver & Rio Grande Western, Denver, Colo. Ballots will be distributed to the members shortly after January 1, and the result of the election will be announced in March.

Traffic News

Mississippi River Barge Line

The operations of the government freight barges on the Mississippi river during the 22 months ending with August last, are the subject of a brief review, prepared by the Transportation Division of the United States Department of Commerce, and published in Commerce Reports for November 28.

For the whole period of 22 months the quantity of freight carried southbound was 296,875 tons, and northbound 159,476 tons. The total movement for August was 266,578 tons, by far the heaviest month's traffic in the record.

Sailings are now made weekly from each terminal, New Orleans and St. Louis; and landings are made at Cairo, Memphis and Vicksburg. The boats have the benefit of municipal docks at St. Louis, at Memphis and at New Orleans, and at Cairo the barge line owns a floating terminal. With funds lent by the Secretary of War, additional terminals are being prepared at Memphis, Vicksburg and New Orleans.

The line now has in service 50 cargo barges and 10 tow boats; and other craft. Forty of the steel cargo barges are 230 ft. long with a capacity of 2,000 tons each; and 10 of the barges are adapted to carry oil in bulk, 118,400 gal. each. The freight rates by the barge line are about 20 per cent lower than those by parallel railroad lines.

Commission Authorizes Temporary Reduction in Rates on Farm Products

The Interstate Commerce Commission on December 2 issued a special order granting the request of the railroads for permission to make a reduction for six months of 10 per cent in the freight rates on agricultural products on short notice and in as inexpensive a manner as possible, by the publication of master tariffs and special supplements to freight tariffs in abbreviated form. The commission has issued the necessary modifications of its rules to permit the abbreviated tariffs to be filed on short notice on or before December 31.

The railroads proposed this temporary reduction as a substitute for the order of the commission which has been made effective on December 27, reducing the rates on grain and hay in the western districts by half of the amount of the increases made in Ex Parte 74; and the request was made in the same petition in which the commission was asked to reopen the Western grain case for further hearing. The present order is effective in all parts of the country except in New England; and it was granted without any statement of the commission's intentions as to the enforcement of its order in the grain case.

The commission also issued separate orders authorizing the establishment of the reduced rates on agricultural products without observing the long-and-short-haul rule, and providing that outstanding orders may be modified to the extent necessary to permit the proposed reduction to be applied to the rates covered by them. An "inexpensive form" of notice is shown with the order. This form has been worked out after conferences with the tariff publishing agents.

Representatives of the western states that would benefit particularly by the reduction on grain, hay and grain products provided for in the commission's order are making a fight to prevent the commission from withdrawing this order and substituting the 10 per cent reduction on agricultural products generally. Clyde M. Reed, chairman of the Kansas Public Utilities Commission and of the management committee of the state commissions which filed the original complaint in this case, which led to the investigation on the commission's own motion in which the order was entered, filed a protest with the commission on Monday against the granting of the railroads' petition. This, the protest said, "is in substance a request that the Interstate Commerce Commission stultify itself by receding from its original position." It says that the railroads have failed to show any change in conditions or changed facts which were not put before the commission during the original investigation and the commission is asked to maintain its order and put the reductions into effect.

Commission and Court News

Court News

Live Stock Shipper Falling From Top of Car

The Circuit Court of Appeals, Eighth Circuit, holds that a shipper of live stock, who himself undertook to move a car to the chute and went on the top of the car in the dark without a lantern, and walked off the end, was guilty of gross negligence as a matter of law, barring recovery from the railroad for his injuries.—*Birkestrand v. Chicago, M. & St. P.*, 275 Fed. 194.

Abandonment of Telegraph Company's Easement

Where an easement for telegraph lines along a railroad right of way was not used for 40 years, during which time the telegraph company had accepted an exclusive lease of rights for its lines, and had subsequently started condemnation proceedings to take part of the right of way, the Alabama Supreme Court holds that the non-user, together with the acceptance of the lease and the condemnation proceedings, sufficiently showed an abandonment of the easement.—*Western Union v. L. & N. (Ala.)*, 89 So. 518.

Neither Railroad Nor Director General Responsible for Defective Track in Military Camp

The Circuit Court of Appeals, Fourth Circuit, holds that neither the Atlantic Coast Line, which built a branch into Camp Jackson, nor the Director General, who took over the operation of the road, was liable for the death of soldiers caused by derailment of a car in the camp from a defective track, the military authorities having taken over control of the track and substituted lighter rails, insecurely fastened, at the place of the accident.—*Heise v. Davis*, 275 Fed. 326.

Sufficient Clearance Between Tracks in Yards

The Rock Island constructed its switching yards at Council Bluffs 20 years ago with the clearance between tracks usual at that time, 6 ft. 6 in., in yards constructed recently the usual clearance being 7 ft. 6 in. In an action for death of an employee, alleged to be due to insufficient clearance, the Minnesota Supreme Court holds that if the yard was reasonably safe, continuing to use it without rearranging the tracks so as to provide a greater clearance is not negligence, unless it appears that such yards are no longer in common use or that changed conditions require a greater clearance. Judgment for the defendant notwithstanding verdict for the plaintiff was affirmed.—*McNamee v. Hines (Minn.)*, 1184 N. W. 675.

Industrial Track Must Be Justified By Amount of Business

The Oklahoma Supreme Court holds that under section 33 of article 9 of the state Constitution, the Corporation Commission is not justified in issuing an order to require a railroad to maintain a "switch" for the benefit of any * * * coal mine, saw-mill * * * or other industry, unless it appears that the amount of business is sufficient to justify the same.

It is also held that when a person seeking to have a switch put in by a railroad for his benefit accepts the terms of a letter that he is to pay a certain amount of the expense of installation, the letter clearly stating that the switch is temporary and shall be removed in six months, no equity arises in his favor to compel the railroad to continue to maintain the switch after the expiration of the time for which it was installed, because of the expenditure of money made by him.—*Rock Island v. State (Okla.)*, 201 Pac. 260.

Foreign Railway News

Raven's Automatic Train Stop

Raven's automatic train stop, the invention of Sir Vincent Raven, chief mechanical engineer of the Northeastern Railway of England, is now fitted to 1,500 locomotives of that road, according to a recent statement in the *Railway Gazette* (London).

The stop is a simple mechanical trip, similar to that in use on the Interborough subways, New York City, and is a development of the well-known cab signal of the same inventor, which has been used on the Northeastern for many years. It is stated that on lines where his apparatus is in use no provision is made for stationing fogmen at distant signals. As the use of power-brakes is, in England, confined mainly to passenger trains, this statement would seem to indicate that the audible signal, sounded in the cab, is a main feature of the system.

The passenger trains of the Northeastern use the Westinghouse brake, but the apparatus works also on trains using the vacuum brake, many of which traverse parts of the Northeastern lines.

Spanish Northern Railway Electrification Project

A contract for the electrification of 40 miles of the Spanish Northern Railway is announced by the Sociedad Iberica de Construcciones Electricas, of Madrid, Spain, one of the associated companies of the International General Electric Company, Inc., of New York. This initial order constitutes the most recent and one of the largest European railway electrification projects now under development. The high voltage direct current system will be used.

The equipment to be supplied by the Sociedad Iberica de

be used similar to those on the St. Paul locomotives, having a double contact shoe.

A New Bill for Reorganizing Spain's Railways

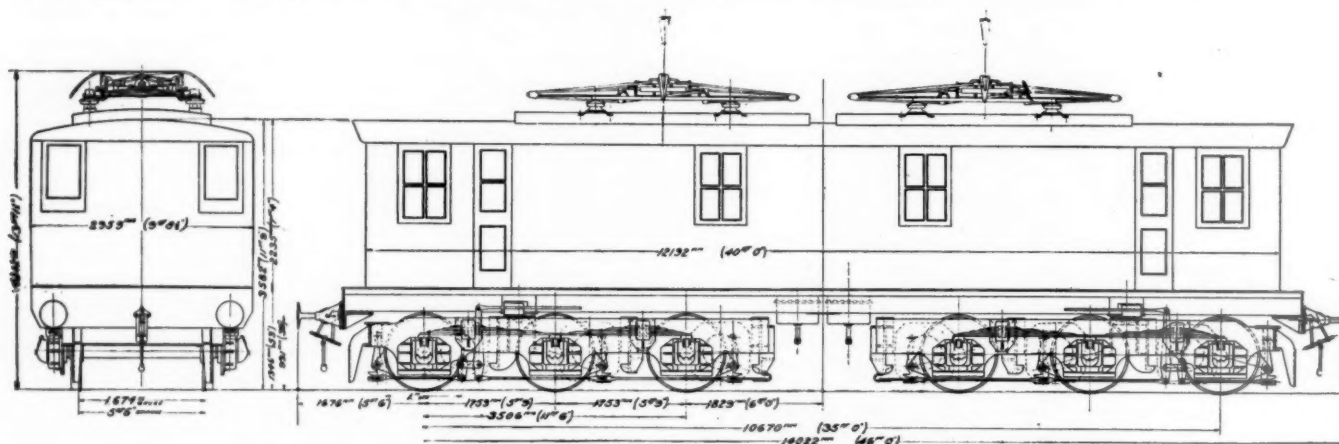
At the last session of the Spanish congress a bill was brought forth for the reorganization of the railways of the kingdom, according to the *Railway Gazette* (London). This bill, the principal provisions of which were noted in the *Railway Age* of July 16 (page 133), evoked so much protest that it was shelved. Now a new bill has been prepared. This legislation would make the state a partner in railway enterprise by having it advance to all the properties enough financial aid to put them on a sound basis. The railways, under the bill, would be managed by a council of 15 members—6 representing the government, 6 the companies, and 3 the Spanish business interests. The council would fix rates sufficiently high to provide adequate returns and net profits would be divided by the stockholders and the government.

German Railways Have a Bad Year

At the close of the war railway rolling stock showed increases in locomotives of 22 per cent and in freight and passenger cars of 10 per cent over numbers on hand at the beginning of 1914, due primarily to confiscation from invaded territory, according to Commerce Reports. As the terms of the armistice forced the return of 5,000 locomotives and 150,000 cars to France and Belgium, the rolling stock now available is considerably less than that of 1914. A difference of 31 per cent is given for locomotives in 1920, and 36 per cent and 25 per cent, respectively, for passenger and freight cars.

A great number of the locomotives and cars now in use are in need of repairs, as well as the roadbeds of most of the German railways.

The railway deficit for the present year (operation and replacement) will amount to about 7,000,000,000 marks (about



End View and Side Elevation of One of the Locomotives to Be Used in Spain

Construcciones Electricas will consist of six 78-metric ton, six motor locomotives, two complete sub-stations, each comprising two 1,500 kilowatt, three unit motor generator sets, transformers and switchgear and the material necessary for line construction.

The first electrification project of the Spanish Northern comprises about 40 miles of the Leon-Gijon line running through the mountains between Ujo and Busdongo. Although this is a single-track line, traffic is extremely heavy, as it is a link between the mining district and the northern seaboard through a mountainous region with many tunnels, considerable grades and severe climatic conditions.

The electric locomotives on order will be of the freight type, with the following dimensions:

Length over buffers.....	46 feet
Height	13 feet, 11 inches
Width of cab.....	9 feet, 8 inches
Rigid wheel base.....	11 feet, 6 inches
Maximum wheel base.....	35 feet

The locomotives will be arranged for regenerative braking, and will operate at 3,000 volts. The locomotive speed at continuous rating is 13.5 miles an hour. Pantograph collectors will

\$35,000,000 at the present rate of exchange) as compared with 15,000,000,000 marks (about \$75,000,000) in 1920. The extraordinary large figure last year was due to an unusual expansion in the number of employees.

An increase of 30 per cent in freight rates is scheduled to take place some time this month. This condition is based on existing rates, which are the result of an 80 per cent raise during 1920, and which in turn had been based on rates greatly advanced the year before. Freight-rate increases were not effected between 1913 and 1917, but during the latter year an advance of 7 per cent was made, followed by further advances, each time over existing rates, of 15 per cent in 1918 and 60 per cent in April and 100 per cent in October, 1919.

Passenger rates are also to be raised very shortly, according to the latest plans, by 25 to 30 per cent. Previous increases in these rates, extending over the period 1913-1920 have amounted to 671 per cent for first-class fares, 433 per cent for second, 380 per cent for third, and 405 per cent for fourth class fares.

Equipment and Supplies

Locomotives

THE LEHIGH & HUDSON RIVER is inquiring for 1 Consolidation locomotive.

THE AKRON, CANTON & YOUNGSTOWN contemplates inquiring for prices soon on 5 locomotives.

THE CUMBERLAND & MANCHESTER has ordered from the Baldwin Locomotive Works, 1 locomotive for passenger service.

THE DELAWARE, LACKAWANNA & WESTERN in the near future expects to ask for prices on about 5 Pacific type locomotives.

Freight Cars

THE ERIE is building 70 caboose cars in its own shops at Buffalo, N. Y.

THE NORFOLK & WESTERN contemplates making repairs to about 2,000 coal cars.

THE SEABOARD AIR LINE is inquiring for prices on the repair of 1,000 or more 40-ton gondola cars.

THE BENGAL & NORTH WESTERN (India) is inquiring through the car builders for 300 four-wheel wagons.

THE CENTRAL OF GEORGIA may be in the market soon for about 800 cars to include box, stock and gondola cars.

THE NORFOLK & WESTERN is asking for prices on 2,000 hopper car bodies also on 2,000 all-steel gondola car bodies of 57½ tons capacity.

THE PAULISTA RAILWAY (Brazil) is inquiring through the car builders for 120 gondola cars of 50-tons capacity and 60 box cars of 40-tons capacity.

THE UNION PACIFIC, reported in the *Railway Age* of December 3, as expecting to be in the market soon for automobile cars is now inquiring for 500, 40-ft. automobile cars, also for 500, 50-ft. all steel automobile cars.

THE PERE MARQUETTE, reported in the *Railway Age* of November 19, as inquiring for from 500 to 2,000 box cars has ordered from the Western Steel Car & Foundry Co., 500 box cars, with an option for 500 additional cars.

THE MATHIESON ALKALI WORKS, Niagara Falls, N. Y., reported in the *Railway Age* of September 3, as inquiring for 20, 30-ton cars for handling tanks, has ordered this equipment from the Standard Steel Car Company.

THE CHESAPEAKE & OHIO has given contracts for the repair of 200 composite cars to the Ralston Steel Car Company, 500 steel cars to the Illinois Car & Manufacturing Company, Chicago Heights, Ill., and 300 composite cars to the American Car & Foundry Company's shops at Huntington, W. Va.

Passenger Cars

THE WABASH is inquiring for a number of passenger train cars.

THE UNION PACIFIC is inquiring for 70 cars for passenger train service.

THE CANADIAN NATIONAL, contemplates buying 6 or more passenger cars for branch line service.

THE NORTHERN PACIFIC is having repairs made to a number of passenger cars at the shops of the Pullman Company.

THE PHILADELPHIA & READING is inquiring for from 45 to 90 passenger cars and from 6 to 10 passenger and baggage cars.

THE NEW YORK, ONTARIO & WESTERN, reported in the *Railway Age* of November 5, as inquiring for cars for passenger train service, has given an order to the Standard Steel Car Company for 20, 70-ft. coaches; 4 70-ft. combination smoking and baggage cars; 3, 60-ft. baggage cars and 3, 60-ft. combination baggage and mail cars. These will be all steel cars, equipped with Commonwealth trucks.

Iron and Steel

THE NEW YORK CENTRAL LINES have placed contracts for 125,000 tons of rail with an option of 25,000 tons additional.

THE CANADIAN NATIONAL recently placed an order for about 40,000 tons of rail, equally divided between the Algoma Steel Corporation and the Dominion Steel Corporation, Sydney.

Machinery and Tools

THE SEABOARD AIR LINE is preparing a list of machine tool requirements, comprising about 25 tools.

THE MISSOURI, KANSAS & TEXAS has ordered a 60-in. duplex-control, horizontal boring machine, also a lathe and a shaper from the Niles-Bement-Pond Company.

THE VIRGINIAN RAILWAY has placed orders for machine tools as follows: 1, 5-ft. motor driven radial drill; 1, 28 by 48-in. motor driven gap lathe and 1, crank planer.

THE ERIE inquiry for various machine shop tools to cost about \$300,000 includes car wheel presses; boring mills; lathes; air compressors; electric welders; shapers and air tools.

Miscellaneous

THE SALT LAKE, GARFIELD & WESTERN is inquiring for 10 trailer trucks.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, December 20, 1921, for its present requirements on galvanized tie dating nails.

THE NEW YORK, NEW HAVEN & HARTFORD is asking for bids until 12 o'clock noon December 20, at New Haven, Conn., for its requirements during 1922 of couplers, malleable castings and steel castings.

THE NEW SABINAS COMPANY, LTD., a coal interest of the Vickers Company, London, England, has awarded the contract for the design and construction of a fireproof, reinforced concrete and steel, coal washing plant and power plant at the Cloete mines, near Sabinas, Coah., Mex., to the Roberts & Schaefer Company, Chicago. Work has started on the project which is to cost approximately \$300,000.

THE INTERSTATE COMMERCE COMMISSION has issued an annual report for the year ending June 30, 1921, showing, by totals for each railroad company, instances in which employees were on duty for periods other than those provided by the Federal Hours of Service Act; to which is added a comparison of these data with totals for the preceding four years.

Causes of delays to trains are tabulated in accordance with the statements presented by the railroad companies, these having, however, no relation to the question of whether or not any given case was excusable.

For 1921 the number of cases where employees in train service were on duty for longer periods than 16 consecutive hours was 39,934 as compared with 67,468 in the year preceding, and larger totals for the years before that. The total number of cases where telegraph operators (at offices continually operated, day and night), were on duty more than nine hours was 25,164, as compared with 33,566 in the year preceding, and about twice the latter number in the second year preceding. The total number of instances of excess work, counting both trainmen and telegraphers, in 1921, including the foregoing and the other and smaller classes, was 67,686. This is only a little more than one-fourth the total number reported in 1918.

Roads reporting fewer than 25 cases in a year are not shown in the five-year comparison.

Supply Trade News

The **Osgood Company**, Marion, Ohio, has opened a branch sales office at 1211 Conway building, Chicago, in charge of **Arthur B. Sonneborn**, as manager.

The **Blaw-Knox Company**, Pittsburgh, Pa., has moved its New York office from the City Investing building to the Carbide & Carbon building, 30 East 42nd street, effective December 15.

The **Enterprise Railway Equipment Company**, Chicago, has purchased all patents and trade mark "Ingoldsby" of the Ingoldsby Automatic Car Company, a corporation organized under the laws of the State of West Virginia.

The stockholders of the **Haskell & Barker Car Company** will meet in New York on January 4, for the purpose of voting upon a proposition to dissolve the corporation and authorize the directors to sell their plant to the Pullman Company.

The **Okonite Company**, Passaic, N. J., has opened a branch office at Atlanta, Ga., in the Candler building. **E. A. Thornwell** is southeastern sales representative and **John L. Phillips**, manager for the territory including North and South Carolina, Georgia, Alabama, Florida, Tennessee, and the city of New Orleans, La.

The **Whiting Corporation**, Harvey, Ill., has bought a controlling interest in the Grindle Fuel Equipment Company, manufacturers of complete powdered coal plants, for use in connection with malleable furnaces, annealing ovens, steam boilers, billet heating and various other types of furnaces. The Grindle Fuel Equipment Company has moved its offices to Harvey, and will continue its business under the same name. Whiting Corporation will manufacture all Grindle equipment. The officers are as follows: **B. H. Whiting**, president; **T. S. Hammond**, secretary and treasurer and **A. J. Grindle**, vice-president and general manager; and the board of directors includes the above officers and **J. H. Whiting**, **R. H. Bourne**, **N. S. Lawrence** and **A. H. McDougall**.

U. S. Light & Heat Not Involved In

Willys Corporation Receivership

The recent receivership of the Willys Corporation has caused some inquiries to be made of the U. S. Light & Heat Corporation, Niagara Falls, N. Y., as to what effect, if any, the proceedings will have respecting the latter company; and certain publicity in connection with the receivership has erroneously carried the idea that the U. S. Light & Heat Corporation is one of the component parts of the Willys Corporation and would, therefore, be affected in its operation by the receivership. These inquiries have led **C. O. Miniger**, president of the U. S. Light & Heat Corporation and who is one of the receivers appointed by the U. S. District Court at Toledo, to make the statement that the receivership in no way affects the business of the U. S. company. His appointment as receiver was made by virtue of his connection with the Electric Auto Lite Company of Toledo, which company is one of the divisions of the Willys Corporation.

The only connection between the Niagara Falls company and the Willys Corporation is that of preferred stock ownership by the Willys Corporation. The corporations and the managements are entirely distinct and the operation of the U. S. L. Company will continue exactly as heretofore.

Obituary

Henry C. Barlow, Traffic director of the Chicago Association of Commerce and chairman of the executive committee of the National Industrial Traffic League, died at his home in Chicago on November 6, at the age of 71. He had been prominent in transportation circles in Chicago for 17 years, having been a leader in the Chicago Shippers Association in 1904. Before that

he was in railroad service, having begun in 1866 on the Illinois Central as office boy and clerk. He was clerk and telegrapher on the Chicago & North Western, held various freight traffic offices on the Santa Fe, the Mexican Central and the Wisconsin Central, and for seven years, ending with 1901, he was president of the Evansville & Terre Haute.

B. E. D. Stafford, general manager of the Flannery Bolt Company, Pittsburgh, Pa., whose death on November 30, at Atlantic City, N. J., was noted in the *Railway Age* of December 3, was born in 1866 in Brooklyn, N. Y., and was educated in the public and night schools. At the age of 15 he took up patent office drawing and soon became an expert penman. In order to better himself for mechanical drawing he acquired a practical knowledge of the machine, tool and screw making trades and within a few years ranked as one of the few expert operators in America of the universal type of milling machine and the automatic screw machine. At the age of 21 he was made foreman of the



B. E. D. Stafford

tool shop of a large manufacturer of cotton machinery at Hopedale, Mass., and built most of the automatic machinery for the plant. Later he became a specialist in reducing shop costs and in 1895 was engaged by **B. M. Jones & Company** to demonstrate the uses of self-hardening steels. Five years later he was employed as a staybolt salesman by the **Ewald Iron Company**. In the fall of 1904, Mr. Stafford was engaged by the Flannery Bolt Company to develop and market the Tate flexible staybolt for locomotive firebox service. During the time he has been identified with that concern, Mr. Stafford has done much to advance the methods of locomotive firebox construction. Mr. Stafford lived in Millville, N. J., and funeral services and burial were in Vineland on the morning of December 3.

Trade Publications

FUEL OIL ENGINE.—The Hadfield-Penfield Steel Company, Bucyrus, Ohio, has issued a 29-page booklet illustrating and describing its vertical and horizontal type fuel oil engines. These engines are amply illustrated in the booklet, both by photographs and sectional drawings. The booklet gives the dimensions for engines from two-cylinder to six-cylinder sizes and includes a chart giving the fuel consumption at different loads and speeds.

STATIONARY STEAM ENGINES.—The Vacuum Oil Company, New York, has issued a large 32-page, illustrated booklet dealing with the subject of steam valve and cylinder lubrication of stationary steam engines. This booklet is along educational lines showing, as it does, by text and illustrations, the various types of stationary steam engines, their method or methods of operation, proper methods of lubrication and the selection of oils. In addition to this, considerable information is given regarding boiler plant and steam production, covering such details as steam quality, exhaust steam, oil in exhaust steam, extraction of oil and feed water treatment.

START THE JOB RIGHT.—An 8-page illustrated folder has been issued by the National Hoisting Engine Company, Harrison, N. J., descriptive of the line of steam hammers, hoists, cableways and derricks manufactured by this company. The folder is well illustrated showing photographs of equipment in actual work driving piles and sheeting and in doing other miscellaneous work under varying conditions and surroundings.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company, which was noted in the *Railway Age* of November 5 (page 911), as receiving bids for the construction of an addition to its Alvarado Hotel at Albuquerque, N. M., to cost approximately \$300,000, has awarded the contract for this work to Charles Fellows, Los Angeles, Cal. The same company will also construct a new laundry building, and repair the old one, at Albuquerque.

CANADIAN NATIONAL.—This company contemplates extending its Vancouver Island line approximately ten miles into the Cowichan Lake territory.

CHICAGO & ALTON.—This company contemplates the construction of a subway at Division street, Bloomington, Ill.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded a contract to T. S. Leake & Company, Chicago, for the construction of a car repair shed, 87 ft. by 200 ft., at Pratt, Kan., estimated to cost \$20,000.

CHICAGO UNION STATION.—This company which was noted in *Railway Age* of December 3 as accepting bids for 3,600 tons of steel to be used in the widening of Canal street from Jackson boulevard to Washington street and the Monroe street viaduct has awarded the contract to the American Bridge Company, Chicago.

CUMBERLAND & MANCHESTER.—This road has recently purchased and is equipping a new ballast plant at a quarry along its line. It is also enlarging its shop facilities and installing new hump scales and additional side tracks at Heidrick, Ky. These improvements will cost approximately \$250,000 and are expected to be completed during the first part of 1922. The road has also closed contracts for equipment covering three locomotives, recently noted in the *Railway Age*, three steel underframe box cars, 25 steel coal cars, 10 wooden coal cars and some other miscellaneous equipment.

ILLINOIS CENTRAL.—This company, which was noted in the *Railway Age* of November 26 (page 1069), as receiving bids for the construction of a frame storehouse at Clinton, Ill., has awarded the contract for this work to Joseph E. Nelson & Sons, Chicago. This work is estimated to cost approximately \$20,000.

MIDLAND VALLEY.—This company, which was noted in the *Railway Age* of December 3 (page 1121), as the Osage Railway Company which had recently applied to the Interstate Commerce Commission for permission to construct about 11 miles of railroad extending from Foraker, Okla., into the Osage County oil field, has awarded the contract for this work to R. L. Plunkett, Pawhuska, Okla.

OREGON-WASHINGTON R. R. & NAVIGATION Co.—This company has been ordered by the city council of Seattle, Wash., to construct a temporary trestle over its Argo yards at First avenue in that city.

SABINE & NECHES.—This company, with a capital stock of \$100,000, has been incorporated to build a railroad from Ruliff, Tex., westward via Deweyville to Gist, a distance of about 16 miles. The directors of this new road are R. J. Wilson, J. P. Hall, and C. C. Smith of Deweyville; A. J. Peavy, R. T. Moore and C. C. Cary of Shreveport, La.; J. B. Smythe and C. E. Walden, of Beaumont, Tex., and W. H. Mangen, of Westlake, La.

TEMISKAMING & NORTHERN ONTARIO.—This company, which was noted in the *Railway Age* of October 22 (page 804), as planning the early extension of its line 70 miles northward, will soon receive bids for this work, according to Vice-Consul J. H. Wetmore, North Bay, Ontario. The vice-consul offers to furnish the specifications for the work to any responsible contracting firm upon request as soon as they are available and will also undertake to deliver to the railway commissioners any bids sent in his care.

Railway Financial News

ASHLAND COAL & IRON.—*Authorized to Issue Notes.*—This company has been authorized by the Interstate Commerce Commission to issue its promissory notes to the amount of \$180,000, payable to the order of the Ashland Iron & Mining Company.

ATLANTA, BIRMINGHAM & ATLANTIC.—*Bondholders' Committee.*—A committee has been formed to represent the holders of the 5 per cent 15-year income mortgage gold bonds, because of default on the road's first mortgage bonds. The committee consists of G. E. Warren, chairman; J. P. Bradshaw, F. R. Dick, E. P. Maynard and A. W. Hutchins, secretary. The Columbia Trust Company, 60 Broadway, New York, is depository.

BALTIMORE & OHIO.—*Annual Report.*—See article on another page of this issue entitled, "Baltimore & Ohio Shows Marked Improvement in 1921."

CHICAGO & EASTERN ILLINOIS.—*Pere Marquette May Buy Brazil Branch.*—See Pere Marquette.

CHICAGO & ILLINOIS WESTERN.—*Authorized to Issue Stock.*—This company has been authorized by the Interstate Commerce Commission to issue \$600,000 of 7 per cent non-cumulative preferred capital stock and deliver it to Dolese & Shepard Company in liquidation of interest-bearing indebtedness due that company amounting to \$600,000.

CHICAGO, BURLINGTON & QUINCY.—*Declares Dividends of 20 a Share.*—This company has declared a semi-annual dividend of 5 per cent, and an extra dividend of 15 per cent, payable December 27 to stock of record December 17. In June last the company paid a dividend of 5 per cent (for no stated period).

As the Northern Pacific and the Great Northern each own \$82,933,700 Burlington stock, the extra dividend declared in Chicago on December 1 will mean additional income to each of the controlling roads of \$12,440,000, equivalent to 5 per cent on the Northern Pacific's \$248,000,000 stock and 4.97 per cent on Great Northern's \$250,000,000 stock.

See also Colorado & Southern.

CHICAGO, MILWAUKEE & ST. PAUL.—*Provision for Maturing Obligations.*—The Wall Street Journal quotes President H. E. Byram as saying that the road's cash position is strong, it has no bank loans, and funds are in hand to cover its interest requirements for several months ahead.

Mr. Byram is quoted further as follows:

As an indication of our sound position it might be mentioned that we are going to anticipate the January 15 instalment of the principal of our equipment trusts held by the Railroad Administration. The instalment is something over \$1,000,000. We applied to the Railroad Administration for permission to do this several days ago, and have received its approval. The advantage is that we will save a month's interest.

The company's \$25,000,000 note to the government, maturing on March 1, next, is well secured, as well and even better than bankers would require, so that there is no occasion to anticipate that the Commerce Commission, which administers the revolving loan fund, would refuse to refund it if borrowing the money elsewhere involved paying a higher interest rate than the 6 per cent which it bears. We are not at all worried about that.

Current traffic conditions in the West show the effect of the forthcoming reduction in rates on agricultural products. The reduction of 10 per cent proposed by the carriers, to be effective probably January 1, would coincide with remission of the 3 per cent federal tax on freight bills, making a difference of 13 per cent in charges to shippers. There is an evident disposition among the farmers to withhold their shipments until they can obtain the benefit of this reduction. For that reason, and on account of failure of coal users to stock up seasonably, November traffic had fallen off distinctly, in comparison with that of October, and was also below that of November, 1920.

After the first of the year it is expected that farmers would ship grain more freely, as no further reduction in freight rates would then be in prospect for some time in the future, and that coal would move in greater volume. Industrial users of coal must soon appreciate the necessity of stocking up against the probable interruption of mining at the end of March, when the present wage agreements expire.

COLORADO & SOUTHERN.—*Resumes Common Dividend.*—A dividend of 3 per cent has been declared on the \$31,000,000 of outstanding common stock, par \$100, the first since 1912, when 1 per cent was paid. The company has also declared the regular annual dividend of 4 per cent on the second preferred, and semi-annual dividend of 2 per cent on the first preferred. All dividends are payable December 31 to stock of record December 17.

The Chicago, Burlington & Quincy owns \$23,667,500 of \$31,000,000 common stock outstanding, \$1,130,000 of \$8,500,000 first preferred, and \$6,078,700 of \$8,500,000 second preferred stock outstanding.

KANSAS CITY, MEXICO & ORIENT.—Granted Loan from Revolving Fund.—The Interstate Commerce Commission has approved a loan of \$2,500,000 to the receiver for the purpose of meeting the maturity of a previous loan of like amount certified by the commission on October 11, 1920, which the receiver says he is unable to pay. The property has failed to earn any sum applicable to the payment of the loan, it has been impossible to procure funds from those already financially interested in the property, notably certain residents of Great Britain, and he does not know of any source from which he can at this time secure the necessary funds with which to meet the obligations. Commissioner Daniels wrote a strong dissenting opinion on the ground that for some time to come it is certain that this carrier as it stands today is unlikely to earn its operating expenses. For 1920 there was a deficit of \$1,321,304 and for the first nine months of 1921 there has been an operating deficit for every month except July and August. Mr. Daniels says it may well be argued that for a carrier of this length serving numerous communities solely dependent upon it for service, there is strong reason why the government should undertake to defray the deficit until the road can be made self-sustaining; but the commission has no authority to do this and the facts do not give reasonable assurance of the repayment of the loan. He believes the remedy required by this situation should be directly applied by Congress. The commission has also granted authority to issue a receiver's certificate for the amount of the loan for pledge with the Secretary of the Treasury as security.

NEW YORK CENTRAL.—Acquisition of Cleveland Union Terminals Company Authorized.—Upon re-hearing the Interstate Commerce Commission has reversed its previous conclusions in the Cleveland passenger terminal case and has authorized the acquisition by the New York Central, Cleveland, Cincinnati, Chicago & St. Louis and the New York, Chicago & St. Louis of control of the Cleveland Union Terminals Company by the purchase of its capital stock. The commission also issued a certificate authorizing these roads through the control of the Cleveland Union Terminals Company to construct and operate the proposed terminal station and line of railroad constituting the purchase thereof in the city of Cleveland.

NEW YORK CENTRAL.—Advance Repaid.—This company has repaid to the War Finance Corporation an advance of \$17,500,000 made on January 23, 1919.

OREGON SHORT LINE.—Bond Sale.—Kuhn, Loeb & Co. have received subscriptions for \$16,424,000 consolidated first mortgage 5 per cent bonds, due July 1, 1946, guaranteed principal and interest by the Union Pacific Railroad Company. The purpose of the sale of these bonds is to provide the funds needed to retire the Oregon Short Line first mortgage 6 per cent bonds, due February 1, 1922. The new bonds are issued under the company's consolidated mortgage dated March 1, 1897. Their sale is subject to the approval of the Interstate Commerce Commission.

PENNSYLVANIA.—President Rea Asks Stockholders' Aid.—In a circular letter to the stockholders mailed with their dividend checks President Samuel Rea says in part:

Through the efforts of the Railroad Labor Board, the threatened railroad strike of the railroad brotherhoods was averted. We have made a large number of reductions in freight rates in individual cases, but we are still receiving requests for reductions on all classes of freight. The published earnings statement of the company show the results for each month, and from comparisons with the year 1920, it is quite evident that a general rate reduction cannot be made until operating expenses are substantially lowered, which can only be accomplished by a reduction in wages. Such wage reduction has been proposed, and if we are unable to agree with our employees, application will be made to the Labor Board to authorize such reductions in accordance with the terms of the present act.

The company urgently wishes to impress this thought upon you, that the prosperity of your company depends largely and directly upon your personal sympathetic support and co-operation. Therefore, you should ship your freight via the Pennsylvania system and direct that shipments to you be made over this system.

The company in which you are financially interested should have your fullest patronage and support and that of your business alliances and friends.

PERE MARQUETTE.—Declares 10 Per Cent Dividend.—The directors on Wednesday declared a dividend of 10 per cent on the 5 per cent preferred stock, payable January 3 to stock of

record December 15. The regular quarterly dividend of 1¼ per cent on the prior preference stock also was declared, payable February 1 to stock of record January 14.

After the meeting the following statement was issued:

The 10 per cent dividend on the preferred stock is the first dividend declared upon that stock since the organization of the railway company in 1917. The dividends upon the preferred stock are cumulative at a rate of 5 per cent per annum from January 1, 1919, so that on December 31, 1921, there will have accrued dividends to the amount of 15 per cent, of which there will remain 5 per cent after payment of the above dividend.

The preferred stock of the railway company was issued upon the reorganization of the Pere Marquette in 1917 and represents bonds of the old company. Although the dividend upon the preferred stock has been earned by the present company in each year since the reorganization was effected, no dividends have previously been paid thereon as the directors have considered it more prudent not to do so owing to conditions arising out of the war and the federal control of railroads by the government.

The company's claim against the government has recently been settled and the directors feel that the condition of the company is now such as to permit the above distribution to be made to the holders of its preferred stock on account of the accumulated dividends to which said stockholders are entitled.

May Purchase C. & E. I. Brazil Branch.—Officials of the Pere Marquette have inspected the Brazil branch of the Chicago & Eastern Illinois with a view to purchasing the property when it is offered for sale on December 16. This branch extends between Momence, Ill., and Brazil, Ind., about 130 miles.

PITTSBURGH & WEST VIRGINIA.—Asks Authority to Acquire Control.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the West Side Belt through an agreement providing for the joint operation of both properties by the Pittsburgh & West Virginia for the respective accounts of said companies.

READING COMPANY.—Reports on Dissolution.—Reports saying they have complied with the orders of the United States District Court for the dissolution of the Reading Company and its allied rail and coal subsidiaries were filed on December 5 in the Federal Court at Philadelphia by the Reading Company, the Philadelphia & Reading Company, the Philadelphia & Reading Railway Company and the Central Railroad Company of New Jersey.

Judges Buffington, Davis and Thompson, after reading the reports, directed that they be "filed," and made the additional provision in the case of the Jersey Central, that the report be held for "further consideration and action as the court may deem proper."

The Jersey Central said it had sold all its stock holdings in the Lehigh & Wilkes-Barre Coal Company, 169,788 shares, under the plan approved by the court, to Jackson E. Reynolds, syndicate manager, of New York, for approximately \$32,500,000. The report stated there were 88 subscribers for the stock, each of whom has made an initial payment of 20 per cent. In conformity with the court's order, the report added, the stock was sold to persons not stockholders in any of the companies affected by the segregation plan, and affidavits that they were not in the class precluded from purchasing the stock have been filed by all the subscribers.

The report of the Reading companies consisted chiefly of a resume of the work of the trustees appointed by the court to receive from the Reading Company its interests in the Jersey Central.

The time for filing the reports expired December 5.

SACRAMENTO NORTHERN.—Acquisition by Western Pacific.—See Western Pacific.

TENNESSEE CENTRAL.—Sale Postponed.—The sale of this road has again been postponed, until January 10.

UNION PACIFIC.—Directors Resign.—Mortimer L. Schiff and Otto H. Kahn, of Kuhn, Loeb & Co., have resigned as directors in compliance with Section 10 of the Clayton Act.

WABASH, CHESTER & WESTERN.—Asks Loan from Revolving Fund.—This company has applied to the Interstate Commerce Commission for a loan of \$500,000 for 15 years.

WESTERN PACIFIC.—Asks Authority to Acquire Control.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Sacramento Northern through the purchase of its stock. The Western Pacific was authorized by the commission last May to issue \$4,180,000 first mortgage 5 per cent bonds. It was proposed to use these bonds for the purpose of acquiring bonds of the Sacramento Northern, but the commission ordered that steps to acquire or control the

property should not be taken until such acquisition had been approved by the commission. See *Railway Age*, May 27, 1921, page 1249.

Tentative Valuations

The Interstate Commerce Commission has recently issued the tentative valuations giving the final value of railroad properties as follows:

	Property Used	Property Owned
L'Anquille River .....1916	\$16,538	\$12,500
Lake Erie & Ft. Wayne.....1916	41,759	37,626
Elwood, Anderson & Lapelle.....1916	109,089	108,910
Lexington Terminal .....1916	28,500	.....
Little Rock, Maumelle & Western.....1917	325,162	300,530

Additional Sales Equipment Trust Certificates

The director general of railroads has, with the consent of the President, confirmed additional sales, at par plus accrued interest, of railroad equipment trust certificates now held by the government, as follows:

To a syndicate consisting of the Guaranty Company and Potter Brothers & Co., of New York; the Union Trust Company of Pittsburgh; The First Trust and Savings Bank of Chicago; The Fifth-Third Bank of Cincinnati; and the Union Trust Company of Cleveland:	
Cleveland, Cincinnati, Chicago & St. Louis, 1923 to 1935, inclusive	\$4,507,100
To The Illinois Trust and Savings Bank, the Merchants Loan and Trust Company, the First Trust and Savings Bank, and the Continental and Commercial Trust and Savings Bank, all of Chicago:	
Delaware & Hudson, 1922 to 1927, incl.....	\$1,592,400
New York Central, 1925 to 1927, incl.....	2,768,100
Chicago & Northwestern, 1925-1927, incl.....	1,994,700
Michigan Central, 1925 to 1927, incl.....	1,039,200
Chicago, St. Paul, Minneapolis and Omaha, 1922 to 1927, incl.....	940,800

Total 8,335,200

Total amount of these sales is..... \$12,842,300

The total amount of equipment trust certificates sold by the government to date, at par plus accrued interest, is \$132,910,600. "With reference to the sale of railroad equipment trust certificates to the syndicate of Chicago banks, totalling \$8,335,200, it is interesting to note that the investment demand for these securities, which at first was confined to the Eastern territory, is gradually spreading westward," said Eugene Meyer, Jr., managing director of the War Finance Corporation. "It appears to indicate that the general improvement in money market conditions is following precedent, and is gradually moving westward. It means that there will be a better market for farm mortgages in the not distant future, and that the agricultural sections will soon begin to feel the benefit of improving financial conditions."

Dividends Declared

Atchison, Topeka & Santa Fe.—Preferred, 2½ per cent, semi-annually, payable February 1 to holders of record December 30.
Beech Creek.—\$0.50, quarterly, payable January 3 to holders of record December 15.
Boston & Providence.—2½ per cent, quarterly, payable January 2 to holders of record December 20.
Buffalo & Susquehanna.—Common, 1¼ per cent, quarterly; preferred, 2 per cent, semi-annually; both payable December 30, to holders of record December 15.
Chicago, Burlington & Quincy.—5 per cent, semi-annually; 15 per cent; both payable December 27 to holders of record December 17.
Colorado & Southern.—Common, 3 per cent; first preferred, 2 per cent, semi-annually; second preferred, 4 per cent, annually; all payable December 31 to holders of record December 17.
Great Northern.—Preferred, 1¾ per cent, quarterly, payable February 1 to holders of record December 31.
Lackawanna Railroad of New Jersey.—1 per cent, quarterly, payable January 3 to holders of record December 6.
New York & Harlem.—Common, \$2.50, semi-annually; preferred, \$2.50, semi-annually; both payable January 3 to holders of record December 15.
New York, Chicago & St. Louis.—Common, 5 per cent, payable December 31 to holders of record December 16.
New York, Lackawanna & Western.—\$1.25, quarterly, payable January 3 to holders of record December 14.
Philadelphia, Baltimore & Washington.—3 per cent, semi-annually, payable December 31 to holders of record December 15.
Pittsburgh, McKeesport & Youghiogheny.—1½ per cent, semi-annually, payable January 3 to holders of record December 15.
Rensselaer & Saratoga.—\$4, semi-annually, payable January 3 to holders of record December 14.
St. Louis, Rocky Mountain & Pacific.—Common, 1 per cent, quarterly; preferred, 1¼ per cent, quarterly; both payable December 31 to holders of record December 17.
Valley Railroad (N. Y.).—2½ per cent, semi-annually, payable January 1 to holders of record December 17.

POLAND has great supplies of oak timber suitable for railway ties, according to a report from Fayette W. Allport, secretary to the trade commissioner at Warsaw.

Railway Officers

Executive

George T. Reid, assistant to the president and western counsel of the Northern Pacific, with headquarters at Tacoma, Wash., has been elected vice-president and western counsel, with the same headquarters.

Chas. D. Quinn, assistant general freight agent of the Louisville & Nashville, with headquarters at Louisville, Ky., has been promoted to assistant to the vice-president in charge of traffic, with the same headquarters. Mr. Quinn was born at Louisville. He entered railroad service on March 16, 1895, as a stenographer in the traffic department of the Louisville & Nashville, and was later transferred to the rate department, where he successively held the positions of rate clerk, chief rate clerk, and chief clerk. On October 1, 1919, he was promoted to assistant general freight agent, with headquarters at Louisville, which position he was holding at the time of his recent promotion.

H. R. Safford, assistant to the president of the Chicago, Burlington & Quincy, with headquarters at Chicago, Ill., has been elected vice-president with the same headquarters.



H. R. Safford

He will continue in his present duties and will, in addition, have jurisdiction over all capital improvements and expenditures; the valuation, real estate, and industrial departments, insurance, and such other matters as may from time to time be assigned to him. Mr. Safford was born at Madison, Ind. After graduating from Purdue University, he began railway service in 1895 as a rodman on the Illinois Central. From 1897 to 1900, he was resident engineer in charge of construction work, and in the

latter year he was promoted to roadmaster. From May, 1903, to March, 1905, he was principal assistant engineer, and on the latter date he was promoted to assistant chief engineer. In July, 1906, he was promoted to chief engineer, maintenance of way, which position he held until May, 1910, when he left railroad service to become assistant to the president of the Edgar Allen Manganese Steel Company. The following year he was appointed chief engineer of the Grand Trunk, which position he held until 1918, when he entered the service of the United States Railroad Administration and was appointed engineering assistant to the regional director of the Central Western region. In February, 1920, he was appointed assistant to the president of the Chicago, Burlington & Quincy, which position he was holding at the time of his recent promotion. Mr. Safford has also taken an active interest in association work, having been president of the American Railway Engineering Association last year. He was also a member of the Committee on Development of the American Society of Civil Engineers.

Financial, Legal and Accounting

J. F. Wolfenden has been appointed auditor of valuation of the Southern Pacific, with headquarters at San Francisco, Cal.

Robert S. Henry has been appointed to the newly created position of associate counsel and director of public relations of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn.

Operating

J. R. Skillen, chief dispatcher of the Atchison, Topeka & Santa Fe, with headquarters at Raton, N. M., has been promoted to trainmaster, with the same headquarters. **T. C. Looney** will succeed Mr. Skillen as chief dispatcher.

E. C. Blanchard, assistant general manager of the Northern Pacific, with headquarters at Tacoma, Wash., has been promoted to general manager of the lines west of Paradise, Mont., with the same headquarters. **C. L. Nichols**, assistant general manager, with headquarters at St. Paul, Minn., has been promoted to general manager of the lines east of Paradise with the same headquarters. The position of assistant general manager at both St. Paul and Tacoma has been abolished.

E. E. McCarty, trainmaster of the Atchison, Topeka & Santa Fe, with headquarters at Needles, Cal., has been transferred to San Bernardino, Cal., succeeding **J. D. McCully**, promoted, as noted in the *Railway Age* of December 3 (page 1123). **R. S. Goodrich**, trainmaster, with headquarters at Gallup, N. M., has been transferred to succeed Mr. McCarty, and **O. W. Schlueter**, chief dispatcher, with headquarters at Winslow, Ariz., has been promoted to succeed Mr. Goodrich. **W. P. Arntz**, chief clerk to the superintendent at San Francisco, has been promoted to trainmaster, with headquarters at Prescott, Ariz., succeeding **H. C. Storey**, deceased.

Traffic

C. E. Jenney has been appointed general agent, passenger department, of the Canadian National with headquarters at New York.

A. B. Chown, general agent of the passenger department, of the Grand Trunk, with headquarters at New York, has been promoted to assistant general passenger agent, with headquarters at Chicago.

H. N. Roberts has been appointed general freight and passenger agent of the Wichita Falls, Ranger & Fort Worth, with headquarters at Ranger, Tex., succeeding **J. M. Strupper**, who left to enter the service of another company.

C. F. White, commercial agent of the Chicago & Alton, with headquarters at Denver, Colo., has been transferred to St. Louis, Mo., succeeding **C. W. Wheeler**, who has resigned to enter the service of another company.

H. D. Landry, assistant general freight agent of the St. Louis Southwestern, with headquarters at St. Louis, Mo., has been transferred to Little Rock, Ark. He will be succeeded by **W. F. Knobloch**. **T. L. Hershman** has been appointed general agent of the freight department, with headquarters at St. Louis.

John M. Dewberry, assistant to the vice-president in charge of traffic of the Louisville & Nashville, with headquarters at Louisville, Ky., has been promoted to general coal and coke agent, with the same headquarters. **C. D. Quinn**, assistant general freight agent, with headquarters at Louisville, will succeed Mr. Dewberry as assistant to the vice-president, and will be succeeded as assistant general freight agent by **Henry E. Kremer**.

L. G. Lucia, general agent of the freight department of the Chicago & Eastern Illinois, with headquarters at St. Louis, Mo., has been transferred to Milwaukee, Wis. **H. J. Dentzman**, division freight agent, with headquarters at Salem, Ill., has been promoted to succeed Mr. Lucia, and **C. C. King** will succeed Mr. Dentzman. **N. C. Calvert**, southwestern passenger agent, with headquarters at Dallas, Tex., has been promoted to general agent, with the same headquarters, and **Harry A. Perkins**, southwestern freight agent, with headquarters at Dallas, has been promoted to general agent of the freight department, with headquarters at Memphis, Tenn.

Mechanical

H. W. Salmon, Jr., acting fuel agent of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to fuel agent.

W. N. Foster has been appointed master mechanic of the Iowa division of the Chicago, Milwaukee & St. Paul, with headquarters at Marion, Iowa, succeeding **E. L. Notley**, who has been assigned to other duties.

J. A. Marshall has been appointed acting master mechanic of the Lake Superior division of the Northern Pacific, with headquarters at Duluth, Minn., succeeding **J. E. Goodman**, who has been granted a leave of absence.

W. R. Harrison, master mechanic of the Atchison, Topeka & Santa Fe, with headquarters at Chanute, Kan., has been transferred to Argentine, Kan., succeeding **E. E. Machovec**, who was promoted to acting mechanical superintendent as noted in the *Railway Age* of November 19.

George M. Davidson, chemist and engineer of tests of the Chicago & North Western, with headquarters at Chicago, has been appointed industrial engineer, with the same headquarters. He will have general supervision of the laboratories, water supply, timber preservation, fuel consumption and other duties assigned to him by the president. **H. D. Browne** will succeed Mr. Davidson as engineer of tests.

Engineering, Maintenance of Way and Signaling

M. B. Clark, division engineer of the Atchison, Topeka & Santa Fe, with headquarters at Needles, Cal., has been transferred to San Bernardino, Cal., succeeding **W. W. Kelly**, promoted, as noted in the *Railway Age* of December 3 (page 1124). **O. R. West**, assistant division engineer at San Francisco, has been promoted to succeed Mr. Clark. **F. D. Kinney**, assistant division engineer at Winslow, Ariz., has been transferred to succeed **Mr. West**, and **R. E. Chambers**, roadmaster, with headquarters at Prescott, Ariz., has been promoted to succeed Mr. Kinney. **F. S. Purdy**, roadmaster, with headquarters at Los Angeles, Cal., has been promoted to inspector of track and roadway, with the same headquarters, succeeding **J. E. McNeil**, who has been disabled.

Obituary

Edward H. Kennedy, who retired as auditor of the Pittsburgh & Lake Erie on January 17, 1921, died on December 2, at his home at Westfield, N. Y. Mr. Kennedy was



E. H. Kennedy

born at New Brighton, Penn., March 1, 1866, and was connected with the Pittsburgh & Lake Erie for 32 years. In 1888 he began his railroad work as a clerk in the accounting department; in 1890 he became chief freight clerk and, in 1893, chief traffic clerk. Later in the same year he was promoted to travelling auditor for the road. In 1900 he was appointed general bookkeeper, advanced in 1902 to assistant auditor and, in 1904, he was appointed auditor. In 1919 Mr. Kennedy was named federal auditor of five lines—the Pittsburgh & Lake Erie, the Monongahela, the Pittsburgh & West Virginia, the Lake Erie & Eastern and the West Side Belt. Because of ill health he retired from service on January 17, 1921.